ShowMeVax

Immunization Registry for the State of Missouri

HL7 Immunization
Implementation Guide and Design
Release 1.0.3 – Published February 25, 2011

Modification to Previous Release (R1.0.1/R1.0.2)		
R1.0.1/R1.0.2 Page #	**Reference**	**Description**
General	Throughout the document	Made cosmetic changes and correcting grammar problems identified in previous versions.
General	Provider Implementation and Validation section	Replace contents of this section with a link to a separate document which will be kept up to date.
General	VXQ match process	Resolve inconsistencies in descriptions throughout the document
General	Response messages	Clarify when ACK messages are sent and when there will be no response. For VXQ and batch VXU, there will be no ACK. For real-time VXU, the ACK will only acknowledge receipt.
8 - 9	**Message Transmission (Web Service vs. HTTPS)**	**Modify definition of "http" messages to include two passwords (one for Active Directory and a second for database authentication) in replace of just one.**
78 – 92	Message Processing Design	Revamp to reflect current processing
93	Internal Table Definitions	Removed
131 - 137	Appendix D - Data Types used in this Implementation Guide	Remove data types not used by ShowMeVax
138 - 142	Appendix E - Memorandum of Agreement	The MOA has been removed from this document, and is available under separate cover.
167 – 197, 199	Appendices	Remove duplicated appendices.
General	Appendices	Add Appendix G - Duplicate Shot Processing.
198	Appendix I – VXU Messages Error Report and File	Remove unneeded appendix
General	VXX and VXR messages	Add MSA, QRD, and QRF segment details

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Revision History

Ver/Rel #	Issue Date	Author	Summary of Changes
Draft V1.0	July 15, 2009	Roselee Hogan	Initial Draft.
V1.1	June 30, 2010	Tom Meeks	Version used for SMV Provider Interfaces.
V1.2	July 21, 2010	Tom Meeks	Addresses comments from pilot providers and their software vendors.
R1.0	August 12, 2010	Tom Meeks	Revised Tables 0005 and 0189.
R1.0.1	September 7, 2010	Tom Meeks	Consolidate Implementation Plan and Interface Design documents into a single document.
R1.0.2	November 30, 2010	Tom Meeks	Add documentation regarding return of MSA segment within VXX and VXR messages.
R1.0.3	February 21, 2011	Tom Rice	Revise implementation guide to accommodate https password requirements and modifications to specific field edit criteria.

PURPOSE

The purpose of this document is to provide both internal State developers and third-parties guidelines for developing interfaces between the State immunization registry (ShowMeVax) and healthcare providers. These interfaces provide the ability to share immunization records between these parties. The major sections of this document include:

- Introduction
- Design and Development Factors
- Provider Implementation and Validation
- HL7 Message Definitions
- Message Processing Design
- Appendices

INTRODUCTION

ShowMeVax supports the Centers for Disease Control's National Immunization Program (NIP) goal to use HL7 for immunization data in a manner as uniformly as possible. Therefore, these ShowMeVax specifications are based on the CDC's *Implementation Guide for Immunization Data Transactions using Version 2.3.1 of the Health Level Seven (HL7) Standard Protocol*, published as version 2.2 in June 2006, available online at:

http://www.cdc.gov/vaccines/programs/iis/stds/downloads/hl7guide.pdf

As a result, specifications not provided in this document (i.e., the ShowMeVax HL7 Immunization Implementation Guide and Design), such as data attributes or whether a data element repeats, default to the standards set forth in the above CDC document.

Additional information regarding HL7 is available online at: http://www.hl7.org.

Objectives

The primary objective of this effort is to establish automated interfaces between the State of Missouri's immunization database (ShowMeVax) and healthcare providers' computer systems (Electronic Health Records - EHR). The ShowMeVax database is the responsibility of the Missouri Department of Health and Senior Service (DHSS) where interfaces will encompass three basic forms:

Phase A

- **Provider Retrieval of Immunization Record from ShowMeVax.** Healthcare providers will be provided online/real-time access via the Internet to State immunization records (ShowMeVax database). Both healthcare provider staff and users of other state registries will be able to retrieve immunization records from ShowMeVax for a specific patient (registrant) with the ability to update their internal EHR systems with the data retrieved.
- **Provider Submittal of Updates to ShowMeVax**. Healthcare providers will submit electronic patient and immunization data to the State for inclusion in the ShowMeVax database. Immunization data submitted will undergo both validation and duplicate records checking.

Phase B

- **Accessing Other State Registries**. ShowMeVax will be modified to provide its users the ability to query other state registries to retrieve immunization records from

those registries. The plan only includes a single state, with others to be added as other states are ready. In addition, in this phase, ShowMeVax would generate immunization updates that would be transmitted to other states.

Goals and Success Factors

Goals and success factors of this project include: a) increased immunization coverage, b) improved data quality and completeness and c) expanded access statewide to centralized immunization database via the Internet. Meeting these goals will achieve the following objectives:

- The number of non-duplicate immunization records stored in the statewide immunization database will be increased, thus increasing the information available to both State and private healthcare organization. An increase in the information recorded will improve the quality of the care delivered by the healthcare provider. Likewise, an increase in the number of shot records will provide the State an improved foundation for analysis.
- Shot duplication will be reduced, thus minimizing the negative factors related to such duplication on the patient, including the potential for over immunization (reduced drug effectiveness).
- By returning immunization history to providers the number of providers interested and engaged in actively submitting updates to the registry will increase. The quality of this data will also improve due to providers' ability to review real-time the data they submitted either through ShowMeVax or from their own software.

Although the system would be available to all healthcare providers, it is going to be the most beneficial to those providers whose practice incorporates immunizations as a key component of its services delivered. As a result, the goal of increased statewide immunization cover will be optimized when these providers and their software vendors participate.

* * * * *

Terminology Convention. *For ease of presentation, throughout this document, the word "provider" represents both healthcare providers (e.g., vaccines for children (VFC) providers, local public health agencies, etc.) and users of other states' registries.*

Acknowledgement*. Selected text or content of this document have been derived or extracted in part from materials referenced in the Appendix B – References. We thank all those who contributed to the efforts as listed in the Reference materials as well as those interested parties who participated in meetings conducted to gather the information assembled in this document.*

DESIGN AND DEVELOPMENT FACTORS

Real-time Request for Vaccination Records

A primary advantage of ShowMeVax is the ability for providers to review the aggregate vaccination history of a person. It is common for a person to receive immunizations from multiple providers. ShowMeVax allows a provider to identify vaccinations a person has received from any provider who has submitted immunization records to ShowMeVax. As a result, when a patient appears at a provider's office for a vaccination, via the provider's computer system, a request can be made to retrieve the vaccination history for that person from ShowMeVax. The general steps in this process include:

- **Provider Submits Query**. Healthcare provider submits a VXQ (Query for Vaccination Record) message to the ShowMeVax to obtain immunization history.
- **Responses to Query**. ShowMeVax can respond back to the provider's system in one of the following ways:
  - **No Record Found (QCK)**. When ShowMeVax does not find a record that matches the provider-supplied parameters, the system will generate a QCK (Query General Acknowledgement) message indicating no matching record was found.
  - **Single Match (VXR).** When ShowMeVax identifies a single individual that matches the provider supplied criteria, the system will generate a VXR (Response to Vaccination Query).
  - **Multiple Records Found (VXX).** When ShowMeVax identifies multiple records in its database that match the individual's parameters, the system will build a VXX (Response to Vaccination Query Returning Multiple PID Matches) message containing a list of possible matches. If more matches are found than can be accommodated in a VXX message, a QCK will be returned.
  - **No Response.** When the query cannot be properly parsed and run against the database, there will be no response.
- **Provider Process of Returned VXX Messages.** After receiving a VXX message, provider's computer system will likely issue a follow-up or second VXQ that refines the information included in the initial registry query, repeating the preceding steps.

Update a Patient's Vaccination Record in ShowMeVax

For ShowMeVax to make patient immunization history available to all providers, providers who physically administer vaccinations must submit a record of those vaccinations to ShowMeVax in a timely fashion. Providers will submit immunization records to ShowMeVax in either real-time or bulk mode. ShowMeVax will then validate each immunization record, checking the quality of the data received, and eliminating duplicate records. Immunization records will be consolidated with existing ShowMeVax records improving the vaccination history for the corresponding person. The specific steps in the process are defined below.

Real-time Updates

Upon receiving and processing a VXR (Single Immunization Record Found), the provider's system will generate a VXU (Unsolicited Vaccination Record Update) message at the time the patient is administered a new vaccination. In addition, a provider who submits a real-time

VXU will receive an ACK (General Acknowledgement) message indicating that the message was received, but not indicating the success or failure of the update, provided that the web service was able to authenticate the sender.

Batch Updates

A provider may choose not to submit updates real-time. The ShowMeVax Provider Interface Module will also receive VXU messages in batch mode. In this case, the provider will not receive any real-time ACK messages. A batch VXU message will include the following batch control segments:

- File Header (FHS)
- File Trailer (FTS)
- Batch Header (BHS)
- Batch Trailer (BTS)

Multiple Matches

Provider systems for processing VXX messages should incorporate a mechanism for selecting one of the individuals in the VXX list, and subsequently, issuing a new VXQ.

Adverse Reaction Messages

Excluded from the ShowMeVax Immunization Provider Interface module at this time.

Inventory Messages

Excluded from the ShowMeVax Immunization Provider Interface module at this time.

HL7 Message Format

The HL7 interfaces defined for ShowMeVax are based on Version 2.3.1 of the HL7 standard protocol published by the CDC (see Appendix B - References). Any deviations from standard CDC values have been documented within the relevant field definitions. The HL7 Messages section of this document defines which HL7 messages are incorporated in the ShowMeVax Provider Interface Module design. Significant deviations from the message definitions that prevent ShowMeVax from being successful will cause processing of the message to cease without returning a message.

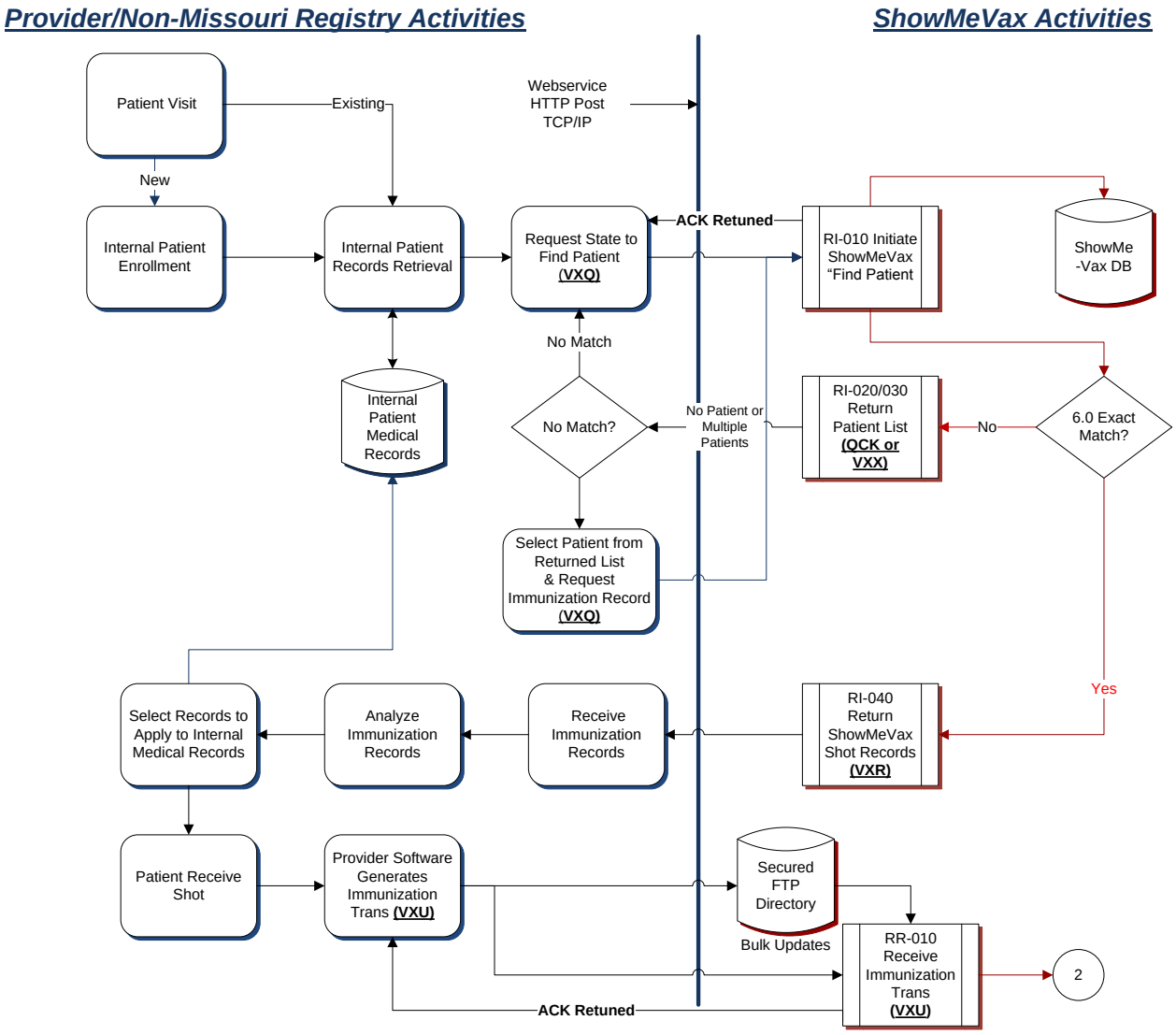
Secure Message Transmittal

Providers will have two options for transmitting HL7 messages to/from ShowMeVax: Web Service or HTTP POST messages. To help make data transmissions secure, messages will be sent via the HTTPS protocol. Each real-time HL7 message must include a valid username and password to authenticate a provider's right to access ShowMeVax.

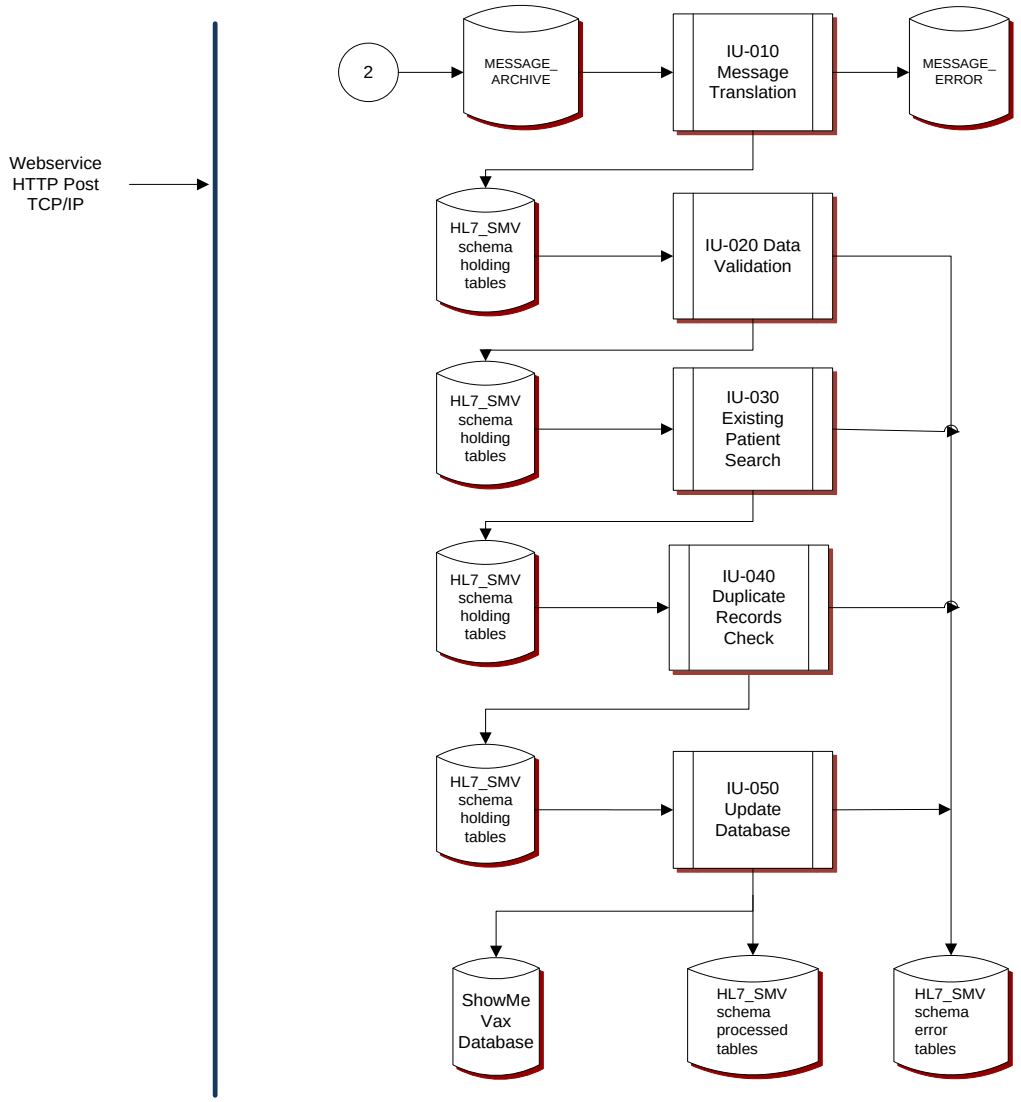
Workflow Diagrams

The workflow diagrams representing how ShowMeVax Provider Interface Module will be constructed are contained on the following pages.

Phase A - Healthcare Provider/Other State Queries and Updates



Phase A - Healthcare Provider/Other State Queries and Updates (page 2)



Technical Requirements

The technical requirements associated with the HL7 Immunization Provider Interface Module are provided below.

Message Transmission

- **Message Formatting**. HL7 (Health Level Seven) communications protocol will be used for both real-time and bulk interfaces, and are based on Version 2.3.1 of the HL7 standard protocol. A definition of each HL7 message is contained in section HL7 Message Definitions
- **Real-time Messages**. All real-time HL7 messages will be transmitted to ShowMeVax by using either SOAP or POST protocols via HTTPS. Users will provide a valid username and password to gain access to ShowMeVax. Real-time messages will be processed directly by ShowMeVax (via Rhapsody), eliminating the need to place the messages in a separate secured file.
- **Update Messages** (VXUs can be transmitted in bulk or as single messages). VXU update messages can be transmitted as follows:
  - **Same as Real-time Messaging**. Providers who transmit real-time messages (VXQs) will submit update messages (VXUs) using the same protocol (e.g., HTTPS POST or SOAP).
  - **Providers Who Transmit Updates Only**. Providers who only transmit update messages (VXUs) may do so in one of the following manners:
    - **Single Update Messages**. Providers, who choose to submit update messages (VXUs) one at a time, will transmit those using SOAP or POST protocols via HTTPS. ShowMeVax will generate a General Acknowledgement (ACK) message for each VXU message indicating that the message was received. This ACK does not represent or imply that the VXU was successfully applied to the ShowMeVax database, only that the message was received.
    - **Batched Update Messages.** Providers who transmit update messages (VXUs) as a batch will do so using SFTP. These messages will be placed in a secured file transfer protocol directory (SFTP). Batched VXUs must be accompanied by the appropriate batch header and footer segments. ACKs are NOT generated by this process.

Resources

- **Rhapsody**. All HL7 message processing will be managed by the Rhapsody software application from Orion.
- **Oracle Database**. All immunization records are stored using the Oracle database management system.

Environment

- **Message Logging**. All incoming and outgoing HL7 messages will be logged by ShowMeVax (by Rhapsody), providing an audit trail of messages shared with or received from providers.
- **Provider Validation Environment**. Each new provider's data must be tested and validated. To accomplish this, a validation environment that mirrors the production environment will be built.

Notice

The HL7 messaging protocols deployed by ShowMeVax do not include the use of TCP/IP or VPN.

Message Transmission (Web Service vs. HTTPS)

Web Service

HTTPS can be used to connect to the SOAP Registry web service. The following is a sample SOAP request and response. The placeholders shown would be replaced with actual values.

```
POST /hl7services/HL7WS.asmx HTTP/1.1
Host: http://xxxxxxx.dhss.mo.gov/webservices/immunization/hl7services
Content-Type: text/xml; charset=utf-8
Content-Length: length

SOAPAction: http://tempuri.org/Request or Post Information from the
Immunization Registry
<?xml version="1.0" encoding="utf-8"?>
<soap:Envelope xmlns:xsi="http://www.w3.org/2001/XMLSchema-
instance" xmlns:xsd="http://www.w3.org/2001/XMLSchema"
xmlns:soap="http://schemas.xmlsoap.org/soap/envelope/">
<soap:Body>

<Request_x0020_or_x0020_Post_x0020_Information_x0020_from_x00
20_the_x0020_Immunization_x0020_Registry
xmlns="http://tempuri.org/">
<USERID>string</USERID>
<AD_PASSWORD>string</AD_PASSWORD>          (password 1)
<DB_PASSWORD>string</DB_PASSWORD>          (password 2)
<FACILITYID>string</FACILITYID>
<MESSAGEDATA>base64Binary</MESSAGEDATA>
</Request_x0020_or_x0020_Post_x0020_Information_x0020_from_x00
20_the_x0020_Immunization_x0020_Registry>
</soap:Body>

</soap:Envelope>
```

HTTP POST Messages

HTTP POST via HTTPS can be used to access the ShowMeVax database where provider messages will contain the following fields:

FIELD NAME	DATA TYPE	NOTES
UserID	String	• The authentication web service expects this to be exactly 8 characters in length. • DHSS will assign each provider a unique user ID. • If an invalid user ID is given, the authentication web service will not pass the Message field to ShowMeVax. Processing of the message will cease without returning a message.
AD Password	String	• This is the password for Active Directory authentication. • **DHSS will assign each provider a unique AD password** for their user ID. • If an invalid password is transmitted by the provider, the authentication web service will not pass the Message field to ShowMeVax. Processing of the provider submitted message will cease **without** ShowMeVax returning a message.
DB Password	String	• This is the password for accessing the ShowMeVax database (DB). • **DHSS will assign each provider a unique database password** for their user ID. • If an invalid password is transmitted by the provider, the internal web service will not pass the Message field to ShowMeVax. Processing of the provider submitted message will cease **without** ShowMeVax returning a message.
Facility Id	String	• The authentication web service expects this to be exactly 9 characters in length. • DHSS will assign each provider a unique Facility Id. • If an invalid Facility Id is transmitted, the authentication web service will not pass the Message field to ShowMeVax. Processing of the provider submitted message will cease **without** ShowMeVax returning a message.
Message	String	• The HL7 message being sent to ShowMeVax.

PROVIDER IMPLEMENTATION AND VALIDATION

Each ***provider*** who seeks to establish interfaces with ShowMeVax must be validated prior to processing HL7 messages. See the HL7 Immunization Message Validation document referenced in Appendix B for the steps required to achieve this validation.

HL7 MESSAGE DEFINITIONS

The following pages define the HL7 messages included in the ShowMeVax Provider Interface Module.

Delimiters

ShowMeVax expects and will use the CDC recommended delimiters for all messages. These include:

DELIMITER		
Character	**Description**	**MEANING**
<CR>	Carriage Return	Segment Terminator
|	Pipe	Field Separator
^	Carat	Component Separator
&	Ampersand	Sub-Component Separator
~	Tilde	Repetition Separator
\	Back Slash	Escape Character

Exhibit 1: HL7 Delimiters

Implemented Message Types

ShowMeVax will accept the message types and corresponding event types as defined in Exhibit 2. A message of any other type will be dropped and a return message will not be generated.

MESSAGE TYPES ACCEPTED BY REGISTRY	SUPPORTED EVENT TYPES (BY MESSAGE TYPE)
VXQ	V01
VXU	V04

Exhibit 2: Message Types

Similarly, ShowMeVax will send the message types and corresponding event types as defined in Exhibit 3. At the current time, ShowMeVax will only send these messages in response to a message received from a provider's system. It will not be initiating an exchange of data.

MESSAGE TYPES SENT BY REGISTRY	SUPPORTED EVENT TYPES (BY MESSAGE TYPE)
ACK	
QCK	
VXX	V02
VXR	V03

Exhibit 3: Message Types with Event Types

Basic Message Construction Rules

Encoding Rules for Sending

- Encode each segment in the order specified in the abstract message format.
- Use HL7 recommended encoding characters ("^~\&").
- Begin each segment with the 3-letter segment ID (for example "RXA").
- Precede each data field with the field separator ("|").
- Encode the data fields in the order given in the corresponding segment definition table.
- Encode each data field according to its HL7 data type format.
- End each segment with the segment terminator (carriage return character, ASCII hex 0D).
- Components, subcomponents, or repetitions that are not valued at the end of a field need not be represented by component separators. The data fields below, for example, are equivalent:

^XXX&YYY&&^ is equal to ^XXX&YYY^
|ABC^DEF^^| is equal to |ABC^DEF|
Also,
NK1|1|DOE^MARY|MTH^Mother^HL70063 is equal to
NK1|1|DOE^MARY|MTH^Mother^HL70063||||||||||

Encoding Rules for Receiving

- If a data segment that is expected is not included, treat it as if none of the data fields within were present.
- If a data segment is included that is not expected, ignore it; this is not an error.
- If data fields are found at the end of a data segment that are not expected, ignore them; this is not an error.

Message Formats

Within the following format definitions the "RQ'D" field indicates whether the corresponding field is required. The following conventions apply:

- MO Req'd:
  - R: Required by ShowMeVax
    RE: Required by ShowMeVax if available - provider system is to include the field if it is available within the provider's database
- CDC Req'd:
  - R: Required by CDC
  - RE: Required by CDC if available - provider system is to include the field if it is available within the provider's database

Note: All CDC Req'd fields are also required by ShowMeVax, and there are fields that are optional according to CDC but are required by ShowMeVax – these differences are documented in the following tables for each message type.

- **Field is Blank**: Not Required/Not Used
- **Repeats**: Indicates whether the field repeats
- **Table:** Indicates the CDC table that contains valid values for the field
- **Item**: Number that is unique for this field across all segments
- **Len:** Length of given field
- **DT:** Data Type (see Appendix D for the list of Data Types)

VXQ - Query for Vaccination Record

The VXQ message is used by a provider to submit a request for a person's vaccination record. As mentioned previously, the message should be formatted as specified in the referenced documentation. Exhibit 5 contains notes for various fields as they pertain to ShowMeVax.

FIELD NAME	FLD #	MO RQ'D	CDC RQ'D	Re-peats	Table	Item	Len	DT	NOTES
MSH Segment									
Field Separator	1	R	R			00001	1	ST	• ShowMeVax will always use the pipe character ("|") as the field separator for all HL7 messages.
Encoding Characters	2	R	R			00002	4	ST	• ShowMeVax will always put a value of "^~\&" in this field.
Sending Application	3	R				00003	180	HD	• This field identifies the sending application among all other applications within the sender's network enterprise. The network enterprise consists of all the applications that participate in the exchange of HL7 messages within the enterprise. Immunization providers may use this field to identify their software name and version.
Sending Facility	4	R				00004	180	HD	• This field uses a name, identifier, and identifier type to identify the facility where the data contained in this individual message originated (i.e., the "owner" of the message information). • The required identifier is a provider ID issued by the Missouri Department of Health and Senior Services using "MOCLIENTID" as the identifier type. • **The provider is to contact DHSS - Bureau of Immunization Assessment and Assurance (BIAA) to obtain their assigned facility identifiers**. • **Important –** a different Sending Facility identifier must be transmitted

FIELD NAME	FLD #	MO RQ'D	CDC RQ'D	Re-peats	Table	Item	Len	DT	NOTES
									for each sub-organization for which the provider wishes to uniquely identify or segregate immunizations. • ShowMeVax will include the ID provided here in the "Receiving Facility" field of the MSH segment of the response message. • If an invalid ID is included, ShowMeVax will not process the message.
Receiving Application	5	R				00005	180	HD	• Uniquely identifies the receiving application among all other applications within the receiver's network enterprise. "SHOWMEVAX" is to be used for immunizations updates being sent to the State of Missouri immunization registry.
Receiving Facility	6	R				00006	180	HD	• This field identifies the receiving facility. "MODHSS" is to be used for immunization updates being sent to the State of Missouri immunization registry.
Date/Time of Message	7	R				00007	26	TS	• Date/time the sending system created the message. The typical HL7 Time stamp (TS) data type is defined to be in the format: YYYY[MM[DD[HHMM[SS[.S[S[S[S]]]]]]]][+/-ZZZZ]^<degree of precision> **Missouri will accept any value and store it has received. As a result, the precision is at the provider's discretion.**
Message Type	9	R	R		0076 0003	00009	7	CM	• ShowMeVax expects this to always be "VXQ^V01" for this type of message.

FIELD NAME	FLD #	MO RQ'D	CDC RQ'D	Re-peats	Table	Item	Len	DT	NOTES
Message Control ID	10	R	R			00010	20	ST	• This field uniquely identifies the message to the provider. ShowMeVax **does NOT dictate the format** of this field, only requiring that it is unique within the provider's system. The receiving system echoes this ID back to the sending system in the message acknowledgment segment (MSA). Many facilities simply use a Date/Time stamp plus a sequentially assigned number. For example: A provider could use the format of "YYYYMMDDMO999999" for this field. The value can be interpreted as: – YYYYMMDD = current system date when query was executed – MO = 2 character abbreviation for Missouri – 999999 = sequential number indicating the number of HL7 messages sent from ShowMeVax on the indicated date.
Processing ID	11	R	R			00011	3	PT	• ShowMeVax will use this value to indicate which of its technical environments (e.g., Test, Validation or Production) to use to process the inbound HL7 message. Valid values are represented in table "HL70103". In addition, Missouri includes "V" to represent its provider validation environment.
Version ID	12	R	R		HL7-0104	0012	60	VID	• "2.3.1"

FIELD NAME	FLD #	MO RQ'D	CDC RQ'D	Re-peats	Table	Item	Len	DT	NOTES
QRD Segment									
Query Date/Time	1	R	R			0025	26	TS	• The date and time the query was generated by the sending application.
Query Format Code	2	R	R		0106	00026	1	ID	• ShowMeVax will only accept the record-oriented-format (i.e., a value of "R" in this field). • ShowMeVax will ignore any other value in this field.
Query Priority	3	R	R			00027	1	ID	• This is the timeframe (duration) in which the sending system (provider system) expects a response. ShowMeVax times out and terminates processing of the VXQ after 60 seconds from the time of receipt of the message. ShowMeVax ignores any value sent in this field.
Query ID	4	R	R			00028	10	ST	• A unique value to the system sending the message. • ShowMeVax will return the ID provided here in the "Query ID" field of the QRD segment of the corresponding VXX or VXR response message.
Quantity Limited Request	7	R	R		0126	00031	10	CQ	• ShowMeVax will return up to 10 (ten) patient records within a resulting VXX message or the value indicated by the provider in this field, whichever is less.
Who Subject filter	8	R	R	Y		0032	60	XCN	• ShowMeVax will only process the following items in this field: – First Name – Middle Name – Last Name – Identifier

FIELD NAME	FLD #	MO RQ'D	CDC RQ'D	Re-peats	Table	Item	Len	DT	NOTES
									– Identifier Type - valid values are: ▪ SR: State Registry ID ▪ PI: Patient Internal Identifier ▪ All other IDs with other ID-Types will be ignored. ▪ Message can include either just SR or PI or both. • ShowMeVax will ignore all other components of this field as they will have no impact on ShowMeVax search results.
What Subject Filter	9	R	R	Y	0048	00033	60	CE	• ShowMeVax will ignore any value in this field.
What Department Data Code	10	R	R		0108	00034	60	CE	• ShowMeVax will ignore any value in this field.
QRF Segment									
Where Subject Filter	1	R	R			00037	20	ST	• This field is to always contain: "MO0000". Any other value in this field will cause ShowMeVax to ignore the request.
Other Query Subject Filter	5	R				00041	60	ST	• ***ShowMeVax locally defines search keys as defined in Exhibit 5.1 immediately below this exhibit. Although, HL7 permits this to be a repeated entity, ShowMeVax will only process the first occurrence if multiples are supplied by the provider.***

Exhibit 5: Reference Information for VXQ Message

The following relates to Field 5 in Exhibit 5 immediately above.

Pos	*Component*	*Data Type*	*Description / Examples*
1	Patient Social Security Number	String	This field must include 9 digits after the system removes all non-numeric characters such as dash (-), forward slash (/), spaces, etc. If 9 digits are not found, the system will ignore the value in this field. It will try to continue processing the message, but it will return an acknowledgement of type 'AE'. Example: 123456789
2	Patient Birth Date	Date	YYYYMMDD If a valid date is not found, the system will ignore the value in this field. It will try to continue processing the message, but it will return an acknowledgement of type 'AE'. Example: July 4, 1976 = 19760704
3	Patient Birth State	ID (code value from HL7 table)	Use 2-letter postal code. If a valid state code is not found, the system will ignore the value in this field. It will try to continue processing the message, but it will return an acknowledgement of type 'AE'.
4	Patient Medicare Number	String	When applicable
5	Patient Medicaid Number	String	This is the State's DCN identifier and is to be provided for all patients when available, including non-Medicaid patients. All Missouri newborns are given a DCN.
6	Mother's Name	Extended Personal Name	<family name> ^<given name>^<middle name or initial>^<suffix>^<prefix>^<degree>
7	Mother's Maiden Name	String	Family name of mother before marriage
8	Mother's SSN	String	Not used by ShowMeVax
9	Father's Name	Extended Personal Name	<family name> ^<given name>^<middle name or initial>^<suffix>^<prefix>^<degree>
10	Father's SSN	String	Not used by ShowMeVax

Exhibit 5.1: Other Query Subject Filter

Preliminary Design. Based on the identifying information provided, ShowMeVax will attempt to locate any and all matching patient records using the guidelines below. (The description below is not intended to imply anything regarding the technical design of the queries used to locate matching records. The goal is only to describe the general concept of how the searches will work.)

1. ShowMeVax will look for a single record where there is an exact match by separately applying the following search criteria. If a single record is found by any of these searches, move on to Step 2. Otherwise, move on to the next search in Step 1. If all Step 1 searches have been exhausted, go to Step 4.

   a. The Patient State Registry ID supplied (if any) matches the Patient State Registry ID in ShowMeVax.
   b. The combination of the Provider's Patient ID and Provider ID supplied (if any) matches that combination of fields in ShowMeVax.
   c. The DCN (Medicaid Number) supplied (if any) matches the DCN in ShowMeVax.
   d. The SSN supplied (if any) matches the patient's SSN in ShowMeVax.

2. If any of the searches in Step 1 resulted in a single match, then a secondary match is performed to validate the match. The secondary match will be satisfied if the inbound record and the ShowMeVax database match on at least two of the following:

   - Patient/client Birth Year and Birth Month
   - Soundex on Mother's Maiden Name
   - Soundex of Client's First Name and Client's Last Name
   - SSN, DCN, Local Patient Identifier (Provider's Patient ID)– other than the one successfully matched in a Step 1 search

   If the secondary match is satisfied, go to Step 3. If the secondary match is not satisfied, return to the next search in Step 1. However, if all Step 1 searches have been exhausted, go to Step 4.

3. A single result is returned via a VXR message. Processing terminates.

4. Perform a Name and DOB search with the following requirements:

   - First and Last name supplied match the patient's name, the patient's alias name, or the patient's birth record name in ShowMeVax.
   - The Date of Birth supplied matches the patient's DOB in ShowMeVax.

   If this search identifies a single matching record, go to step 3. If zero or more than ten matches are found, go to Step 5. Otherwise, go to Step 6.

5. Perform a relaxed search intended to identify a list of potential matches. Apply the following filters consecutively, narrowing the search results until only two to ten records are returned. • Soundex on Client's First and Last Names • Client's Birth Year • Client's Birth Month • Soundex on Mother's Maiden Name If, after the application of any of these filters, the search returns only two to ten records, go to Step 6. If this process results in fewer than two or more than ten records being selected, go to Step 7.
6. Multiple (two to ten) records are returned via a VXX message. Processing terminates.
7. Notice is given via a QCK message that no matching records are found. Processing terminates.
For any search, if there is a matching record that is marked for deletion in ShowMeVax, it will not be returned as part of the search results. ShowMeVax will always respond with the appropriate message type as follows: • If no matching records (or more than ten) are found, a QCK message will be returned. • If a single matching record is found, a VXR message will be returned. • If multiple (two to ten) matching records are found, a VXX message will be returned. NOTE: The above description is not intended to imply anything regarding the technical design of the queries used to locate matching records in ShowMeVax. The goal is only to describe the general concept of how the searches will work.

VXX - Response to Vaccination Query Returning Multiple PID Matches

The VXX message is used in response to a VXQ message whenever there are multiple patient records in ShowMeVax that match the query. As mentioned previously, the message should be formatted as specified in the referenced documentation. Exhibit 6 contains notes for various fields as they pertain to ShowMeVax.

FIELD NAME	FLD #	MO RQ'D	CDC RQ'D	Re-peats	Table	Item	Len	DT	NOTES
MSH Segment									
Field Separator	1	R	R			00001	1	ST	• ShowMeVax will always use the pipe character ("|") as the field separator for all HL7 messages.
Encoding Characters	2	R	R			00002	4	ST	• ShowMeVax will always put a value of "^~\&" in this field.
Sending Application	3	R				00003	180	HD	• This field identifies the sending application among all other applications within the sender's network enterprise. The network enterprise consists of all the applications that participate in the exchange of HL7 messages within the enterprise. Immunization providers may use this field to identify their software name and version. • "SHOWMEVAX" is to be used for immunization responses being sent from the State of Missouri immunization registry.
Sending Facility	4	R				00004	180	HD	• This field uses a name, identifier, and identifier type to identify the facility where the data contained in this individual message originated (i.e., the "owner" of the message information). • "MODHSS" is to be used for immunization responses being sent from the State of Missouri immunization registry.
Receiving Application	5	R				00005	180	HD	• This is the same value that was in the Sending Application on the corresponding VXQ.

FIELD NAME	FLD #	MO RQ'D	CDC RQ'D	Re-peats	Table	Item	Len	DT	NOTES
Receiving Facility	6	R				00006	180	HD	• This is the same value that was in the Sending Facility on the corresponding VXQ.
Date/Time of Message	7	R				00007	26	TS	• Date/time the sending system created the message. The typical HL7 Time stamp (TS) data type is defined to be in the format: YYYY[MM[DD[HHMM[SS[.S[S[S[S]]]]]]]][+/-ZZZZ]^<degree of precision> **Missouri only provides time to the tenth of a second.**
Message Type	9	R	R		0076 0003	00009	7	CM	• ShowMeVax expects this to always be "VXX^V02" for this type of message.
Message Control ID	10	R	R			00010	20	ST	• This field contains a value that uniquely identifies the message to ShowMeVax.
Processing ID	11	R	R			00011	3	PT	• Used to indicate how to process the message as defined in HL7 processing rules. See Table 0103 for valid values.
Version ID	12	R	R		0104	0012	60	VID	• Matched by the receiving system to its own HL7 version to be sure the message will be interpreted correctly. Use a value of "2.3.1" to indicate HL7 Version 2.3.1.
MSA Segment									
Acknowledgment Code	1	R	R		0008	00018	2	ID	• ShowMeVax will always respond using the original acknowledgement mode. • ShowMeVax will only respond with a VXX message when the message was processed without error and two to ten matching records were found. Therefore, the only value that will be used here is "AA".
Message Control ID	2	R	R			00010	20	ST	• ShowMeVax will always put the value of the "Message Control ID" field in the MSH segment of the corresponding VXQ message in this field.

FIELD NAME	FLD #	MO RQ'D	CDC RQ'D	Re-peats	Table	Item	Len	DT	NOTES
***QRD Segment** (this is a copy of the QRD segment from the corresponding VXQ)*									
Query Date/Time	1	R	R			0025	26	TS	• The date and time the query was generated by the sending application.
Query Format Code	2	R	R		0106	00026	1	ID	• ShowMeVax will only accept the record-oriented-format (i.e., a value of "R" in this field). • ShowMeVax will ignore any other value in this field.
Query Priority	3	R	R			00027	1	ID	• This is the timeframe (duration) in which the sending system (provider system) expects a response. ShowMeVax times out and terminates processing of the VXQ after 60 seconds from the time of receipt of the message. ShowMeVax ignores any value sent in this field.
Query ID	4	R	R			00028	10	ST	• A unique value to the system sending the message. • ShowMeVax will always put the value of the "Query ID" field in the QRD segment of the corresponding VXQ message in this field.
Quantity Limited Request	7	R	R		0126	00031	10	CQ	• ShowMeVax will return up to 10 patient records within a resulting VXX message or the value indicated by the provider in this field, whichever is less.
Who Subject filter	8	R	R	Y		0032	60	XCN	• ShowMeVax will only process the following items in this field: – First Name – Middle Name – Last Name – Identifier – Identifier Type - valid values are: ▪ SR: State Registry ID

FIELD NAME	FLD #	MO RQ'D	CDC RQ'D	Re-peats	Table	Item	Len	DT	NOTES
									▪ PI: Patient Internal Identifier ▪ All other IDs with other ID-Types will be ignored. ▪ Message can include either just SR or PI or both. • ShowMeVax will ignore all other components of this field as they will have no impact on ShowMeVax search results.
What Subject Filter	9	R	R	Y	0048	00033	60	CE	• ShowMeVax will ignore any value in this field.
What Department Data Code	10	R	R		0108	00034	60	CE	• ShowMeVax will ignore any value in this field.
***QRF Segment** (this is a copy of the QRF segment from the corresponding VXQ)*									
Where Subject Filter	1	R	R			00037	20	ST	• This field is to always contain: "MO0000". Any other value in this field will cause ShowMeVax to ignore the request.
Other Query Subject Filter	5	R				00041	60	ST	• ***ShowMeVax locally defines search keys as defined in Exhibit 5.1. Although, HL7 permits this to be a repeated entity, ShowMeVax will only process the first occurrence if multiples are supplied by the provider.***
PID Segment									
Patient Identifier List	3	R	R	Y	0203	00106	20	CX	• Contains one or more identifiers used to uniquely identify the patient (e.g. medical record number, patient identifier, Medicaid number, SSN, etc.). Sub-components 1 (ID) and 5 (identifier type code) are required in the PID-3 field. ShowMeVax will only process the following field identifier types: o MA (Medicaid number)

FIELD NAME	FLD #	MO RQ'D	CDC RQ'D	Re-peats	Table	Item	Len	DT	NOTES
									○ SR (State Registry (ShowMeVax) ID) ○ SS (Social Security Number) ○ PI (provider's internal system ID) • All other identifier types in this field will be ignored. • This field can be repeated.
Patient Name	5	R	R	Y		00108	48	XPN	• This field contains the legal name of the patient. See the XPN data type. The patient's last and first names will be placed in the first two components, respectively. If the name type code component is included, it will be valued "L" for Legal (see Table 0200). • ShowMeVax does not support repetition of this field.
Mother's Maiden Name	6	RE		Y		00109	48	XPN	• Contains the family name under which the mother was born (i.e., before marriage). See the XPN data type. If the name type code component is included, will be set to "M" for Maiden Name (see Table 0200). ShowMeVax will only use the family name component from this field, extracting the mother's first name from the NK1 segment. • ShowMeVax does not support repetition of this field.
Date of Birth	7	R				00110	26	TS	• This field contains the patient's year, month and day of birth in the format YYYYMMDD. ShowMeVax does not include the time component.
Sex	8	R			0001	00111	1	IS	• Use 'F', 'M' or 'U'

FIELD NAME	FLD #	MO RQ'D	CDC RQ'D	Re-peats	Table	Item	Len	DT	NOTES
Patient Alias	9	RE					48	XPN	• The Name Type component will be "A" if any value is entered in this field. • ShowMeVax will not provide any value associated with other name type. • NOTE: Name values will be parsed by ShowMeVax to ensure a standardized format prior to searching for or updating a record. This may result in slight variations of names submitted versus names returned.
Patient Race	10	RE		Y	0005	00113	80	CE	• Contains a code indicating the patient's race (see Table 0005). If it is necessary to further define the patient's ancestry as Hispanic, use field PID-22-Ethnicity Group. This field can be repeated, representing that the patient's immunization record indicates multiple races.
Patient Address	11	RE		Y	0190	00114	106	XAD	• ShowMeVax will provide addresses of one of the following address types: "H" (Home), "P" (Permanent), "M" (Mailing), or "BR" (Birth Residence) (see Table 0190). In general, ShowMeVax will only return the address it considers primary. However, if birth residence information (Birth State, Birth County, Birth Country) is present in ShowMeVax, a BR address type will additionally be provided in this repeating field.
Patient Number - Home	13	RE		Y		00116	40	XTN	• This field contains the patient's phone numbers, and, possibly, e-mail address. ShowMeVax recognizes telecommunication use codes in component 2 (see Table 0201), but ignores use codes other than "PRN", "WPN", and "NET". If "PRN" or "WPN" is specified, ShowMeVax will use the first

FIELD NAME	FLD #	MO RQ'D	CDC RQ'D	Re-peats	Table	Item	Len	DT	NOTES
									component, expecting a 10-digit number for the area code and phone number combined. If component 2 is missing, ShowMeVax will assume a value of "PRN" • If component 2 is "NET", the e-mail address must be provided in component 4. • ShowMeVax supports repetition of this field.
Ethnic Group	22	RE		Y	0189	00125	80	CE	• This field can be used to further define the patient's ancestry as Hispanic (see Table 0189). • ShowMeVax does not support repetition of this field.
Multiple Birth Indicator	24	RE			0136	00127	1	ID	• This field indicates whether the patient was part of a multiple birth (see Table 0136). "Y" indicates that the patient was part of a multiple birth; otherwise this field will be omitted.
Birth Order	25	RE				00128	2	NM	• This filed is relevant when client was born in a multiple birth. Use 1 for the first born, 2 for the second, etc. This field is useful in matching client data to existing records.
NK1 Segment									
Set ID - NK1	1	R	R			00190	4	SI	• This field contains a number that identifies the occurrence of this NK1 segment within its association with the PID segment. Using the NK1-1 Set ID, multiple NK1 segments can be associated with one PID segment. "1" represents the first occurrence of the Set ID for the first occurrence. ShowMeVax will only process the first occurrence.
Name	2	R		Y		00191	48	XPN	• This field contains the name of the next-of-kin or associated party. ShowMeVax does not support repetition of this field. • **Note: The mother's maiden name should be reported in PID-6..**

FIELD NAME	FLD #	MO RQ'D	CDC RQ'D	Re-peats	Table	Item	Len	DT	NOTES
Relationship	3	R			0063	00192	60	CE	• This field defines the relationship between the patient and the name of the next of kin or associated party (see Table 0063). ShowMeVax uses only the first three components of the CE data type, for example: |MTH^Mother^HL70063|. ShowMeVax does not support repetition of this field.
Address	4	RE		Y		00193	106	XAD	• See the XAD data type. • ShowMeVax does not support repetition of this field.
Phone Number	5	RE		Y		00194	40	XTN	• Same processing rules as Patient Number – Home (PID-13).
Date of Birth	16	RE				00110	26	TS	• Next of kin's date of birth.
Next-of- Kin/Associated Party's Identifiers	33	RE		Y		00751	32	CX	• This field contains identifiers for the next-of-kin/associated party. ShowMeVax only supports SSN and Medicaid number (Same as Missouri's DCN).

Exhibit 6: Reference Information for VXX Message

VXR - Response to Vaccination Query Returning the Vaccination Record (VXR)

The VXR message is used in response to a VXQ message whenever ShowMeVax has uniquely identified a single patient matching the criteria contained in the associated query. As mentioned previously, the message should be formatted as specified in the referenced documentation. Exhibit 7 contains notes for various fields as they pertain to ShowMeVax.

FIELD NAME	FLD #	MO RQ'D	CDC RQ'D	Re-peats	Table	Item	Len	DT	NOTES
MSH Segment									
Field Separator	1	R	R			00001	1	ST	• ShowMeVax will always use the pipe character ("|") as the field separator for all HL7 messages.
Encoding Characters	2	R	R			00002	4	ST	• ShowMeVax will always put a value of "^~\&" in this field.
Sending Application	3	RE				00003	180	HD	• This field identifies the sending application among all other applications within the sender's network enterprise. The network enterprise consists of all the applications that participate in the exchange of HL7 messages within the enterprise. Immunization providers may use this field to identify their software name and version. • "SHOWMEVAX" is to be used for immunization responses being sent from the State of Missouri immunization registry.
Sending Facility	4	R				00004	180	HD	• This field uses a name, identifier, and identifier type to identify the facility where the data contained in this individual message originated (i.e., the "owner" of the message information). • "MODHSS" is to be used for immunization responses being sent from the State of Missouri immunization registry.

FIELD NAME	FLD #	MO RQ'D	CDC RQ'D	Re-peats	Table	Item	Len	DT	NOTES
Receiving Application	5	R				00005	180	HD	• This is the same value that was in the Sending Application on the corresponding VXQ.
Receiving Facility	6	R				00006	180	HD	• This is the same value that was in the Sending Facility on the corresponding VXQ.
Date/Time of Message	7	R				00007	26	TS	• Date/time the sending system created the message. The typical HL7 Time stamp (TS) data type is defined to be in the format: YYYY[MM[DD[HHMM[SS[.S[S[S[S]]]]]]]][+/-ZZZZ]^<degree of precision> **Missouri will accept any value and store it has received. As a result, the precision is at the provider's discretion.**
Message Type	9	R	R		0076 0003	00009	7	CM	• "VXR^V03"
Message Control ID	10	R	R			00010	20	ST	• This field uniquely identifies the message to ShowMeVax.
Processing ID	11	R	R			00011	3	PT	• ShowMeVax will use this value to indicate which of its technical environments (e.g., Test, Validation or Production) to use to process the inbound HL7 message. Valid values are represented in table "HL70103". In addition, Missouri includes "V" to represent its provider validation environment.
Version ID	12	R	R		HL7-0104	0012	60	VID	• "2.3.1"

FIELD NAME	FLD #	MO RQ'D	CDC RQ'D	Re-peats	Table	Item	Len	DT	NOTES
MSA Segment									
Acknowledgment Code	1	R	R		0008	00018	2	ID	• ShowMeVax will always respond using the original acknowledgement mode. • ShowMeVax will only respond with a VXR message when the message was processed without error and a single matching record was found. Therefore, the only value that will be used here is "AA".
Message Control ID	2	R	R			00010	20	ST	• ShowMeVax will always put the value of the "Message Control ID" field in the MSH segment of the corresponding VXQ message in this field.
QRD Segment ***(this is a copy of the QRD segment from the corresponding VXQ)***									
Query Date/Time	1	R	R			0025	26	TS	• The date and time the query was generated by the sending application.
Query Format Code	2	R	R		0106	00026	1	ID	• ShowMeVax will only accept the record-oriented-format (i.e., a value of "R" in this field). • ShowMeVax will ignore any other value in this field.
Query Priority	3	R	R			00027	1	ID	• This is the timeframe (duration) in which the sending system (provider system) expects a response. ShowMeVax times out and terminates processing of the VXQ after 60 seconds from the time of receipt of the message. ShowMeVax ignores any value sent in this field.
Query ID	4	R	R			00028	10	ST	• A unique value to the system sending the message. • ShowMeVax will always put the value

FIELD NAME	FLD #	MO RQ'D	CDC RQ'D	Re-peats	Table	Item	Len	DT	NOTES
									of the "Query ID" field in the QRD segment of the corresponding VXQ message in this field.
Quantity Limited Request	7	R	R		0126	00031	10	CQ	• ShowMeVax will return up to 10 patient records within a resulting VXX message or the value indicated by the provider in this field, whichever is less.
Who Subject filter	8	R	R	Y		0032	60	XCN	• ShowMeVax will only process the following items in this field: – First Name – Middle Name – Last Name – Identifier – Identifier Type - valid values are: ▪ SR: State Registry ID ▪ PI: Patient Internal Identifier ▪ All other IDs with other ID-Types will be ignored. ▪ Message can include either just SR or PI or both. • ShowMeVax will ignore all other components of this field as they will have no impact on ShowMeVax search results.
What Subject Filter	9	R	R	Y	0048	00033	60	CE	• ShowMeVax will ignore any value in this field.
What Department Data Code	10	R	R		0108	00034	60	CE	• ShowMeVax will ignore any value in this field.
***QRF Segment** (this is a copy of the QRF segment from the corresponding VXQ)*									
Where Subject Filter	1	R	R			00037	20	ST	• This field is to always contain: "MO0000". Any other value in this field will cause ShowMeVax to ignore the request.

FIELD NAME	FLD #	MO RQ'D	CDC RQ'D	Re-peats	Table	Item	Len	DT	NOTES
Other Query Subject Filter	5	R				00041	60	ST	• ***ShowMeVax locally defines search keys as defined in Exhibit 5.1. Although, HL7 permits this to be a repeated entity, ShowMeVax will only process the first occurrence if multiples are supplied by the provider.***
PID Segment									
Patient Identifier List	3	R	R	Y	0203 (ID Types)	00106	20	CX	• Contains one or more identifiers used to uniquely identify the patient (e.g. medical record number, patient identifier, Medicaid number, SSN, etc.). Sub-components 1 (ID) and 5 (identifier type code) are required in the PID-3 field. ShowMeVax will only process the following field identifier types: o MA (Medicaid number) o SR (State Registry (ShowMeVax) ID) o SS (Social Security Number) o PI (provider's internal system ID) • All other identifier types in this field will be ignored. • This field can be repeated.
Patient Name	5	R	R	Y		00108	48	XPN	• This field contains the legal name of the patient. See the XPN data type. The patient's last and first names are provided in the first two components, respectively. When the name type code component is included, it will have a value of "L" for Legal (see Table 0200).

FIELD NAME	FLD #	MO RQ'D	CDC RQ'D	Re-peats	Table	Item	Len	DT	NOTES
Mother's Maiden Name	6	RE		Y		00109	48	XPN	• Contains the family name under which the mother was born (i.e., before marriage). See the XPN data type. If the name type code component is included, it will have a value of "M" for Maiden Name (see Table 0200). ShowMeVax will only use the family name component from this field, extracting the mother's first name from the NK1 segment. • ShowMeVax does not support repetition of this field.
Date of Birth	7	R				00110	26	TS	• This field contains the patient's year, month and day of birth in the format YYYYMMDD. ShowMeVax ignores any time component in this field.
Sex	8	R			0001	00111	1	IS	• Will contain 'F', 'M', or 'U'
Patient Alias	9	RE					48	XPN	• The Name Type component will be "A" if any value is entered in this field. • ShowMeVax will not provide any value associated with other name type. • NOTE: Name values will be parsed by ShowMeVax to ensure a standardized format prior to searching for or updating a record. This may result in slight variations of names submitted versus names returned.
Patient Race	10	RE		Y	0005	00113	80	CE	• Contains a code indicating the patient's race (see Table 0005). If it is necessary to further define the patient's ancestry as Hispanic, use field PID-22-Ethnicity Group. This field can be repeated,

FIELD NAME	FLD #	MO RQ'D	CDC RQ'D	Re-peats	Table	Item	Len	DT	NOTES
									represent that the patient's immunization record indicates multiple races.
Patient Address	11	RE		Y	0190	00114	106	XAD	• ShowMeVax will provide addresses of one of the following address types: "H" (Home), "P" (Permanent), "M" (Mailing), or "BR" (Birth Residence) (see Table 0190). In general, ShowMeVax will only return the address it considers primary. However, if birth residence information (Birth State, Birth County, Birth Country) is present in ShowMeVax, a BR address type will additionally be provided in this repeating field.
Patient Number - Home	13	RE		Y		00116	40	XTN	• This field contains the patient's phone numbers. ShowMeVax recognizes telecommunication use codes in component 2 (see Table 0201) and telecommunication equipment type codes in component 3 (see Table 0202). If "PRN" is specified, ShowMeVax will use the 6th and 7th components for the area code and phone number respectively. This is the preferred specification (see PID-13 example 1 below). If component 2 is missing, ShowMeVax will assume the phone number is formatted as follows in component 1 (see PID-13 example 2 below): [NNN][(999)]999-9999[X99999][B99999][C any text]. ShowMeVax supports repetition of this field. • If a patient's home phone number **is**

FIELD NAME	FLD #	MO RQ'D	CDC RQ'D	Re-peats	Table	Item	Len	DT	NOTES
									marked "Sensitive", then no address will be returned. • If a patient's home phone number **is NOT marked "Sensitive**" then the following selection rule applies. A patient within ShowMeVax can have multiple addresses. If the patient's records indicate one or more Primary Addresses, ShowMeVax will return the most recent Primary Address. If the patient record does not contain any Primary Addresses, then ShowMeVax will return the most recent address available.
Ethnic Group	22	RE		Y	0189	00125	80	CE	• This field can be used to further define the patient's ancestry as Hispanic (see Table 0189). • ShowMeVax does not support repetition of this field.
Multiple Birth Indicator	24	RE			0136	00127	1	ID	• This field indicates whether the patient was part of a multiple birth (see Table 0136). A "Y" will indicate that the patient was part of a multiple birth; otherwise this field will be empty.
Birth Order	25	RE				00128	2	NM	• This filed is relevant when client was born in a multiple birth. Use 1 for the first born, 2 for the second, etc. This field is useful in matching client data to existing records.
PD1 Segment									
Immunization Registry Status	16	R			0441	01569	1	IS	ShowMeVax will only return immunizations related to active records/patients, as result the only code to be returned will be A: Active

FIELD NAME	FLD #	MO RQ'D	CDC RQ'D	Re-peats	Table	Item	Len	DT	NOTES
Immunization Registry Status Effective Date	17	RE				01570	8	DT	Effective date (the date the first shot within the individual's ShowMeVax record was given)
NK1 Segment		For all fields in this segment, ShowMeVax will return the patient's Mother data if available. Otherwise, ShowMeVax will return data associated with the person designated as the patient's Primary Responsible Party.							
Set ID - NK1	1	R	R			00190	4	SI	• This field contains a number that identifies the occurrence of this NK1 segment within its association with the PID segment. Using the NK1-1 Set ID, multiple NK1 segments can be associated with one PID segment. "1" as represents the first occurrence of the NK1, all other occurrence will not be used by ShowMeVax.
Name	2	R		Y		00191	48	XPN	• This field contains the name of the next of kin or associated party.
Relationship	3	R			0063	00192	60	CE	• This field defines the relationship between the patient and the name of the next of kin or associated party (see Table 0063). Use only the first three components of the CE data type, for example: |MTH^Mother^HL70063|. ShowMeVax does not support repetition of this field.
Address	4	RE		Y		00193	106	XAD	• See the XAD data type. • ShowMeVax does not support repetition of this field.
Phone Number	5	RE		Y		00194	40	XTN	• This field contains the patient's phone numbers, and, possibly, e-mail address. ShowMeVax recognizes

FIELD NAME	FLD #	MO RQ'D	CDC RQ'D	Re-peats	Table	Item	Len	DT	NOTES
									telecommunication use codes in component 2 (see Table 0201), but ignores use codes other than "PRN", "WPN", and "NET". If "PRN" or "WPN" is specified, ShowMeVax will use the first component, expecting a 10-digit number for the area code and phone number combined. • If component 2 is "NET", the e-mail address must be provided in component 4. • ShowMeVax supports repetition of this field.
Date of Birth	16					00110	26	TS	• This field contains the next-of-kin's birth date. ShowMeVax ignores any time component.
Next-of –Kin/ Associated Party's Identifiers	33	RE		Y		00751	32	CX	• This field contains identifiers for the next-of-kin/associated party. ShowMeVax only supports SSN and Medicaid number (Same as Missouri's DCN).
PV1 Segment									
Patient Class	2	R	R		0004	00132	1	IS	• This field contains a code indicating a patient's class or category. It is required by HL7, although it does not have a consistent industry-wide definition. This component should be coded with an "R".
Financial Class	20	RE		Y	0064	00150	50	FC	• This field (**a repeating field**) contains the financial class assigned to the patient and the associated effective date, and is used to identify sources of reimbursement. ShowMeVax supports the repetition of this field for each immunization being sent with corresponding dates (see field RXA-3).

FIELD NAME	FLD #	MO RQ'D	CDC RQ'D	Re-peats	Table	Item	Len	DT	NOTES
									• *ShowMeVax will accept valid VFC Eligibility codes in this field. The current list of valid values are:* *o V00 - VFC Eligibility not determined/unknown* *o V01 - Not VFC Eligible* *o V02 - VFC Eligible - Medicaid* *o V03 - VFC Eligible - Uninsured* *o V04 - VFC Eligible - American Indian/Alaskan Native* *o V05 - VFC Eligible - Underinsured* *o V06 - VFC Eligible - MO-specific eligibility* *o V07 - VFC Eligible - Local-specific eligibility*
PV2 Segment									*Per the Recommendation of the CDC's Implementation Guide, this optional segment will be ignored if it is included in VXR messages sent to ShowMeVax.*
IN1 Segment									*Per the Recommendation of the CDC's Implementation Guide, this optional segment will be ignored if it is included in VXR messages sent to ShowMeVax.*
IN2 Segment									*Per the Recommendation of the CDC's Implementation Guide, this optional segment will be ignored if it is included in VXR messages sent to ShowMeVax.*
IN3 Segment									*Per the Recommendation of the CDC's Implementation Guide, this optional segment will be ignored if it is included in VXR messages sent to ShowMeVax.*

FIELD NAME	FLD #	MO RQ'D	CDC RQ'D	Re-peats	Table	Item	Len	DT	NOTES
ORC Segment									*Per the Recommendation of the CDC's Implementation Guide, this optional segment will be ignored if it is included in VXR messages sent to ShowMeVax.*
RXA Segment									
Give Sub-ID Counter	1	R	R			00342	4	NM	• The NIP's guidelines recommend that this field's value should always be zero (0).
Administration Sub-ID Counter	2	R	R			00344	4	NM	• ShowMeVax will always put a value of "999" in this field to indicate dose numbers are not being included in the vaccine information.
Date/Time Start of Administration	3	R	R			00345	26	TS	• **(Service Date).** Contains the date the vaccine was administered. T**his field will be the same as RXA- 4.**
Date/Time End Of Administration	4	R				00346	26	TS	Contains the date the vaccine was administered. **This field will be the same as RXA-3.**
Administered Code	5	R				00347	100	CE	• This field identifies the vaccine administered. ShowMeVax includes the CVX code, CPT code, or Vaccine Trade Name for the vaccine administered. When a CVX code is provided, the CVX code will be in the first component and the literal "CVX" in the third component. • The CPT code or vaccine trade name, use components will be in the four through six. For example, give the CPT code in the fourth component and "C4" in the sixth component, |^^^90700^DtaP^C4|. If using vaccine trade name, use "MOTN" as the name of the coding system. When sending/receiving trade names to/from

FIELD NAME	FLD #	MO RQ'D	CDC RQ'D	Re-peats	Table	Item	Len	DT	NOTES
									ShowMeVax, the CVX component of this field should be included with the CVX code repeated in the 4th component. • Missouri will return CVX and CPT when available as well as the associated trade name when available.
Administered Amount	6	R	R			00348	20	NM	• ShowMeVax does not collect Administered Amount, and places a value of "999" in this field.
Administration Notes	9	RE		Y		00351	200	CE	• ShowMeVax is following the NIP's guidelines by using this field to indicate whether the immunization being reported was administered (new) or came from other records (historical).
Administering Provider	10	RE		Y		00352	200	XCN	• The HL7 standard states that this field is used to identify the provider who ordered the immunization, the person physically administering the vaccine (the "vaccinator") or the person who recorded the immunization (the "recorder").
Administering At Location	11	RE				00353	200	CM	• The field will contain the name and address of the facility where the immunization was administered.
Administer Per (time unit)	12	RE/C	C			00354	20	ST	• Is dependent on the value in RXA-5.
Substance Lot Number	15	RE		Y		01129	20	ST	• This field contains the manufacturer's lot number for the vaccine administered. • ShowMeVax does not support repetition of this field.
Substance Expiration Date	16	RE		Y		01130	26	TS	• ShowMeVax will only use the date-released portion of this field.

FIELD NAME	FLD #	MO RQ'D	CDC RQ'D	Re-peats	Table	Item	Len	DT	NOTES
Substance Manufacturer Name	17	RE		Y	0227	01131	60	CE	• Contains the manufacturer of the vaccine administered (see Table 0227).
Action Code-RXA	21	RE			0323	01224	2	ID	• Not available as of July 21, 2010.
RXR Segment (Optional segment)									
Route	1	R	R		0162	00309	60	CE	• ShowMeVax will include the route used to administer the vaccination.
Site	2	RE		0163		00310	60	CE	• ShowMeVax will include the site where the vaccination was administered.
OBX Segment									
Set ID - OBX	1	RE				00569	4	SI	• Will contain a "1" for the first OBX within the message, "2" for the second and so forth.
Value Type	2	RE/C	C			00570	3	ID	• Use CE for ShowMeVax.
Observation Identifier	3	R	R			00571	80	CE	• Indicates a Vaccination Contraindication/Precaution, • Will be codes as 30945-0 or null.
Observation Sub-ID	4		C			00572	20	ST	• Will be empty from ShowMeVax.
Observation Value	5	RE	C	Y		00573	65536	CE	• ShowMeVax has imposed a CE data type upon this field.
Observ Result Status	11	R	R		0085	00579	1	ID	• The field is required for HL7. Use "F" for ShowMeVax.
Date/Time of the Observation	14	RE				00582	26	TS	• This field records the date of the observation (YYYYMMDD), if available
NTE Segment (this segment is not used at this time by ShowMeVax)									

Exhibit 7: Reference Information for VXR Message

VXU - Unsolicited Vaccination Record Update (VXU)

The VXU message is used by a provider to submit a vaccination they have administered within their clinic. Each VXU is to include only the current vaccination and not vaccinations from previous visits. As mentioned previously, the message should be formatted as specified in the referenced documentation. Exhibit 8 contains notes for various fields as they pertain to ShowMeVax.

Given the definition of the VXU message, it is possible to construct a properly formatted message that contains information regarding a patient, but does not include any vaccines having been administered. If ShowMeVax receives this type of message, one of two scenarios will apply:

- If the patient already exists in ShowMeVax, the demographic information in the VXU message will be used to update ShowMeVax.
- If the patient does not exist in ShowMeVax, the message will be ignored. (At this time, there does not appear to be any value in creating a patient in ShowMeVax via the VXU message if no vaccinations can be associated to them.)

When a matching patient record is found, ShowMeVax will then review the data included in the VXU message.

- Patient demographic data in the message (including name, date of birth, etc.) may be used to update the relevant fields in ShowMeVax. One caveat to this is that the patient's date of birth will not be updated in ShowMeVax if the record was received from the Vital Statistics system. For these records, the Vital Statistics system is considered the source of this data, and any changes to the patient date of birth field for these records needs to originate in the Vital Statistics system.
- If the vaccination in the message already exists in ShowMeVax, ShowMeVax will update the applicable fields with the data supplied in the VXU message.
- If the vaccination does not exist, ShowMeVax will add the vaccination to the patient's record.
- If the vaccination has an administration date before the patient's date of birth, the vaccination will not be added to ShowMeVax.
- If ShowMeVax already has another vaccination on the same date within the same vaccine group, the incoming vaccination will not be added to ShowMeVax.

FIELD NAME	FLD #	MO RQ'D	CDC RQ'D	Re-peats	Table	Item	Len	DT	NOTES
MSH Segment									
Field Separator	1	R	R			00001	1	ST	• ShowMeVax expects that incoming messages will use the pipe character ("|") as the field separator for all messages.
Encoding Characters	2	R	R			00002	4	ST	• ShowMeVax expects that incoming messages will contain the recommended value of "^~\&" in this field.
Sending Application	3	R				00003	180	HD	• This field identifies the sending application among all other applications within the sender's network enterprise. The network enterprise consists of all the applications that participate in the exchange of HL7 messages within the enterprise. Immunization providers may use this field to identify their software name and version.
Sending Facility	4	R				00004	180	HD	• This field uses a name, identifier, and identifier type to identify the facility where the data contained in this individual message originated (i.e., the "owner" of the message information). • The required identifier is a provider ID issued by the Missouri Department of Health and Senior Services using "MOCLIENTID" as the identifier type. • **The provider is to contact DHSS - Bureau of Immunization Assessment and Assurance (BIAA) to obtain their assigned facility identifiers**. • **Important –** a different Sending Facility identifier must be transmitted for each sub-organization for which the provider wishes to uniquely identify or segregate immunizations. • ShowMeVax will include the ID provided here in the "Receiving Facility" field of the

FIELD NAME	FLD #	MO RQ'D	CDC RQ'D	Re-peats	Table	Item	Len	DT	NOTES
									MSH segment of the response message. • If an invalid ID is included, ShowMeVax will not process the message.
Receiving Application	5	R				00005	180	HD	• Uniquely identifies the receiving application among all other applications within the receiver's network enterprise. "SHOWMEVAX" is to be used for immunizations updates being sent to the State of Missouri immunization registry.
Receiving Facility	6	R				00006	180	HD	• This field identifies the receiving facility. "MODHSS" is to be used for immunization updates being sent to the State of Missouri immunization registry.
Date/Time of Message	7	R				00007	26	TS	• ShowMeVax will archive this in the message log.
Message Type	9	R	R		0076 0003	00009	7	CM	• ShowMeVax expects this to always be "VXU^V04" for this type of message.
Message Control ID	10	R	R			00010	20	ST	• Should be a unique ID (within each system sending messages to ShowMeVax) and is generated by the system sending the message. • ShowMeVax will archive this in its message log.
Processing ID	11	R	R		0103	00011	3	PT	• ShowMeVax will use this value to indicate which of its technical environments (e.g., Test, Validation or Production) that generated the message. Valid values are represented in table "HL70103". In addition, Missouri includes "V" to represent its provider validation environment.
Version ID	12	R	R		0104	0012	60	VID	• ShowMeVax expects all messages to use version 2.3.1.

FIELD NAME	FLD #	MO RQ'D	CDC RQ'D	Re-peats	Table	Item	Len	DT	NOTES
PID Segment									
Patient Identifier List	3	R	R	Y	0203 (ID Types)	00106	20	CX	• Contains one or more identifiers used to uniquely identify the patient (e.g. medical record number, patient identifier, Medicaid number (Same as Missouri's DCN**)**, SSN, etc.). Sub-components 1 (ID) and 5 (identifier type code) are required in the PID-3 field. ShowMeVax will only process the following field identifier types: o PI (Patient Internal Identifier – Provider's Id for the individual) o SR (State Registry (ShowMeVax) ID) o SS (Social Security Number) o MA (Medicaid Number) • All other identifier types in this field will be ignored. • This field can be repeated.
Patient Name	5	R	R			00108	48	XPN	• This field contains the legal name of the patient. See the XPN data type. The patient's last and first names are required in the first two components, respectively. If the name type code component is included, it should be valued "L" for Legal (see Table 0200). • Note: ShowMeVax cannot match patients with placeholder first names such as Infant, Baby, Girl, Boy, etc. ShowMeVax does **not** support repetition of this field. Occurrences other than the first will be ignored.
Mother's Maiden Name	6	RE				00109	48	XPN	• Contains the family name under which the mother was born (i.e., before marriage). See the XPN data type. If the name type code component is included, it should be valued

FIELD NAME	FLD #	MO RQ'D	CDC RQ'D	Re-peats	Table	Item	Len	DT	NOTES
									"M" for Maiden Name (see Table 0200). ShowMeVax will only use the family name component from this field, extracting the mother's first name from the NK1 segment. ShowMeVax does **not** support repetition of this field. Occurrences other than the first will be ignored. • Note: ShowMeVax encourages the inclusion of this field to help distinguish between patients with the same names and dates of birth. • **Internal Database Update Logic**. If this field is non-blank and the corresponding field in the ShowMeVax database is blank, then this field will be added (moved) to this field in the database. Otherwise, if this field is non-blank and the corresponding ShowMeVax field is non-blank, then the database is not updated with this field.
Date/Time of Birth	7	R				00110	26	TS	• This field contains the patient's year, month and day of birth in the format YYYYMMDD. ShowMeVax ignores any time component. • **Internal Database Update Logic**. If this field is non-blank and the corresponding field in the ShowMeVax database is blank, then this field will be added (moved) to this field in the database. Otherwise, if this field is non-blank and the corresponding ShowMeVax field is non-blank, then the database is not updated with this field.
Sex	8	R			0001	00111	1	IS	• Use 'F', 'M', or 'U' • **Internal Database Update Logic**. If this

FIELD NAME	FLD #	MO RQ'D	CDC RQ'D	Re-peats	Table	Item	Len	DT	NOTES
									field is non-blank and the corresponding field in the ShowMeVax database is blank, then this field will be added (moved) to this field in the database. Otherwise, if this field is non-blank and the corresponding ShowMeVax field is non-blank, then the database is not updated with this field.
Patient Alias	9	RE		Y			48	XPN	• ShowMeVax expects the Name Type component to be "A" if any value is entered in this field. • ShowMeVax will ignore any value associated with other name type. • **Note**: Name values will be parsed by ShowMeVax to ensure a standardized format prior to searching for or updating a record. This may result in slight variations of names submitted versus names returned. • **Internal Database Update Logic**. If this field is non-blank, and is not the same as an existing alias name for the patient, then add it as a new alias name to the ShowMeVax database.
Patient Race	10	RE		Y	0005	00112	80	CE	• Contains a code indicating the patient's race (see Table 0005). If it is necessary to further define the patient's ancestry as Hispanic, use field PID-22-Ethnicity Group. • ShowMeVax supports repetition of this field. • **Internal Database Update Logic**. If this field is non-blank and the corresponding field in the ShowMeVax database is blank, then this field will be added (moved) to this field in the database. Otherwise, if this field is

FIELD NAME	FLD #	MO RQ'D	CDC RQ'D	Re-peats	Table	Item	Len	DT	NOTES
									non-blank and the corresponding ShowMeVax field is non-blank, then the database is not updated with this field.
Patient Address	11	RE		Y	0190 0212	00114	106	XAD	• ShowMeVax will only retain an address type of "H" (Home), "P" (Permanent), "M" (Mailing), or "BR" (Birth Residence) (see Table 0190). If the address type is omitted, "H" is assumed. Other address types will be ignored. If address type "BR" is the only type provided for a new patient, ShowMeVax will treat it as though it were "H". • ShowMeVax recommends use of the USPS format for recording street address, other designation (e.g. "Apt 312"), city, state and zip. See Table 0212 for the three-character country code, if not "US". • ShowMeVax will ignore the county code. • If an address type of "BR" is specified, ShowMeVax will retain only the birth state and country from this repetition. If the ISO 3166 Country Code is not known, simply send the name of the country as free text. • **Internal Database Update Logic.** If this field is non-blank and the ShowMeVax patient address is absent, then add this address as the patient's primary address. If this field is non-blank and the ShowMeVax patient address already exists, then add this address as a non-primary address.

FIELD NAME	FLD #	MO RQ'D	CDC RQ'D	Re-peats	Table	Item	Len	DT	NOTES
Patient Number - Home	13	RE		Y	0201	00116	40	XTN	• This field contains the patient's phone numbers, and, possibly, e-mail address. ShowMeVax recognizes telecommunication use codes in component 2 (see Table 0201), but ignores use codes other than "PRN", "WPN", and "NET". If "PRN" or "WPN" is specified, ShowMeVax will use the first component, expecting a 10-digit number for the area code and phone number combined. If component 2 is missing, ShowMeVax will assume a value of "PRN" • If component 2 is "NET", the e-mail address must be provided in component 4. • ShowMeVax supports repetition of this field. • **Internal Database Update Logic**. If this field is non-blank and the corresponding field in the ShowMeVax database is blank, then this field will be added (moved) to this field in the database. Otherwise, if this field is non-blank and the corresponding ShowMeVax field is non-blank, then the database is not updated with this field.
Ethnic Group	22	RE			0189	00125	80	CE	• This field can be used to further define the patient's ancestry as Hispanic (see Table 0189). • ShowMeVax does **not** support repetition of this field. Occurrences other than the first will be ignored. • **Internal Database Update Logic**. If this field is non-blank and the corresponding field in the ShowMeVax database is blank, then this field will be added (moved) to this field in the database. Otherwise, if this field is non-blank and the corresponding ShowMeVax field is non-blank, then the

FIELD NAME	FLD #	MO RQ'D	CDC RQ'D	Re-peats	Table	Item	Len	DT	NOTES
									database is not updated with this field.
Multiple Birth Indicator	24	RE			0136	00127	1	ID	• This field indicates whether the patient was part of a multiple birth (see Table 0136). Use "Y" to indicate that the patient was part of a multiple birth; otherwise this field can be omitted. • **Internal Database Update Logic**. If this field is non-blank and the corresponding field in the ShowMeVax database is blank, then this field will be added (moved) to this field in the database. Otherwise, if this field is non-blank and the corresponding ShowMeVax field is non-blank, then the database is not updated with this field.
Birth Order	25	RE				00128	2	NM	• This filed is relevant when client was born in a multiple birth. Use 1 for the first born, 2 for the second, etc. This field is useful in matching client data to existing records. • **Internal Database Update Logic**. If this field is non-blank and the corresponding field in the ShowMeVax database is blank, then this field will be added (moved) to this field in the database. Otherwise, if this field is non-blank and the corresponding ShowMeVax field is non-blank, then the database is not updated with this field.
PD1 Segment									
Protection Indicator	12				0136		1	ID	Values may be as specified in Table 0136. If the value provided is "N", an error will be generated. ShowMeVax will not load records that cannot be shared.

FIELD NAME	FLD #	MO RQ'D	CDC RQ'D	Re-peats	Table	Item	Len	DT	NOTES
Immunization Registry Status	16	R			0441	01569	1	IS	ShowMeVax will only return immunizations related to active records/patients, as result the only code to be returned will be A: Active
Immunization Registry Status Effective Date	17	RE				01570	8	DT	Effective date (the date the first shot within the individual's ShowMeVax record was given)
NK1 Segment (optional segment)									
Set ID - NK1	1	R	R			00190	4	SI	This field contains a number that identifies the occurrence of this NK1 segment within its association with the PID segment. Using the NK1-1 Set ID, multiple NK1 segments can be associated with one PID segment. Use "1" as the Set ID for the first occurrence of the NK1 segment within the message, "2" for the second, and so forth.
Name	2	R				00191	48	XPN	• This field contains the name of the next of kin individual responsible for the patient (sometimes this is the patient's next-of-kin or some other associated party. • ShowMeVax does **not** support repetition of this field. Occurrences other than the first will be ignored. • **Note:** The mother's maiden name should be reported in PID-6, never in NK1-2.
Relationship	3	R			0063	00192	60	CE	• This field defines the relationship between the patient and the name of the responsible party (see Table 0063). Use only the first three components of the CE data type, for example: |MTH^Mother^HL70063|. ShowMeVax does not support repetition of this field.

FIELD NAME	FLD #	MO RQ'D	CDC RQ'D	Re-peats	Table	Item	Len	DT	NOTES
Address	4	RE		Y		00193	106	XAD	• Same processing rules apply to this field as Patient Address (PID-11). Although, this field repeats, ShowMeVax will only process the first occurrence.
Phone Number	5	RE		Y		00194	40	XTN	• Same processing rules as Patient Number – Home (PID-13).
Date of Birth	16	RE				00110	26	TS	• Next of kin's date of birth – improves the ability to identify matching record or to add a new record in the ShowMeVax database. • This field contains the patient's year, month and day of birth in the format YYYYMMDD. ShowMeVax ignores any time component.
Next of Kin/Associated Party's Identifiers	33	RE		Y		00751	32	CX	• This field contains identifiers for the next of kin/associated party. ShowMeVax supports SSN and Medicaid number (Same as Missouri's DCN). This field, not NK1-37 - Contact Person SSN, should be used to record all identifiers, including SSN. The SSN is not displayed in ShowMeVax and is only used for patient security (see PD1-12).
PV1 Segment									
Patient Class	2	R	R		0004	00132	1	IS	• This field contains a code indicating a patient's class or category. It is required by HL7, although it does not have a consistent industry-wide definition. This component should be coded with an "R".
Financial Class	20	RE		Y	0064	00150	50	FC	• This field (**a repeating field**) contains the financial class assigned to the patient and the associated effective date, and is used to identify sources of reimbursement. ShowMeVax supports the repetition of this field for each immunization being sent with

FIELD NAME	FLD #	MO RQ'D	CDC RQ'D	Re-peats	Table	Item	Len	DT	NOTES
									corresponding dates (see field RXA-3). • *ShowMeVax will accept valid VFC Eligibility codes in this field. The current list of valid values are:* *o V00 - VFC Eligibility not determined/unknown* *o V01 - Not VFC Eligible* *o V02 - VFC Eligible - Medicaid* *o V03 - VFC Eligible - Uninsured* *o V04 - VFC Eligible - American Indian/Alaskan Native* *o V05 - VFC Eligible - Underinsured* *o V06 - VFC Eligible - MO-specific eligibility* *o V07 - VFC Eligible - Local-specific eligibility* • ShowMeVax will also accept other codes as described in Table 0064.
PV2 Segment									*Per the Recommendation of the CDC's Implementation Guide, this optional segment will be ignored if it is included in VXU messages sent to ShowMeVax.*
IN1 Segment									*Per the Recommendation of the CDC's Implementation Guide, this optional segment will be ignored if it is included in VXU messages sent to ShowMeVax.*
IN2 Segment									*Per the Recommendation of the CDC's Implementation Guide, this optional segment will be ignored if it is included in VXU messages sent to ShowMeVax.*
IN3 Segment									*Per the Recommendation of the CDC's Implementation Guide, this optional segment will be ignored if it is included in VXU messages*

FIELD NAME	FLD #	MO RQ'D	CDC RQ'D	Re-peats	Table	Item	Len	DT	NOTES
									sent to ShowMeVax.
ORC Segment									*Per the Recommendation of the CDC's Implementation Guide, this optional segment will be ignored if it is included in VXU messages sent to ShowMeVax.*
RXA Segment									
Give Sub-ID Counter	1	R	R			00342	4	NM	ShowMeVax expects this value to always be "0". ShowMeVax will ignore any other value in this field.
Administration Sub-ID Counter	2	R	R			00344	4	NM	For ShowMeVax this field will always be "999".
Date/Time Start Of Administration	3	R	R			00345	26	TS	Contains the date the vaccine was administered. ShowMeVax ignores any time component.
Date/Time End of Administration	4	R	R			00346	26	TS	Contains the date the vaccine was administered. ShowMeVax ignores any time component.
Administered Code	5	R	R		0292	00347	100	CE	This field identifies the vaccine administered. ShowMeVax accepts the CVX code or the CPT code for the vaccine administered. If using the CVX code, give the CVX code in the first component and "CVX" in the third component. If using the CPT code, use components four through six. For example, give the CPT code in the fourth component and "C4" in the sixth component, |^^^90700^DtaP^C4|. Examples: Submitting only the CVX code: |20^DTaP^CVX|

FIELD NAME	FLD #	MO RQ'D	CDC RQ'D	Re-peats	Table	Item	Len	DT	NOTES
									Submitting only the CPT code: |^^^90700^DTaP^C4| Submitting CVX and CPT codes: |20^DTaP^CVX^90700^DTaP^C4|
Administered Amount	6	R	R			00348	20	NM	ShowMeVax does not collect Administered Amount, and expects a value of "999" in this field.
Administration Notes	9	R		Y	NIP 001	00351	200	CE	• ShowMeVax is following the NIP's guidelines by using this field to indicate whether the immunization being reported was administered (new) or came from other records (historical). The submitter should assign the value "00" to the identifier component of this field to indicate that the immunization is new. See Table NIP001. Examples: New immunization: |00^New Immunization Record^NIP001| Historical immunization: |01^Historical Information^NIP001| (source unspecified) |07^Historical Information^NIP001|(from school record)
Administering Provider	10	RE		Y		00352	200	XCN	• The HL7 standard states that this field is used to identify the provider who ordered the immunization, the person physically administering the vaccine (the "vaccinator") or the person who recorded the immunization (the "recorder"). However, ShowMeVax is only interested in identifying and storing the "vaccinator", and only when the immunization is specified as "new" in RXA-9. For each "new" immunization, submitters

FIELD NAME	FLD #	MO RQ'D	CDC RQ'D	Re-peats	Table	Item	Len	DT	NOTES
									should include their unique identifier for the "vaccinator" in component 1 of this field (the ID number) and the vaccinator's name in components 2 through 7 (the person name). In addition, the submitter should specify VEI - for vaccinator employee number; as the identifier type code in component 13 to indicate the person being described is the "vaccinator". ShowMeVax will store the "vaccinator" information with the immunization.
Administered-At Location	11	RE				00353	200	CM	• Is to contain the name and address of the facility where the immunization was administered. Submitters should specify the facility name in component 4 of this field, and the address in components 9 through 14. ShowMeVax uses the USPS format for recording street address, other designation (e.g. "Suite 325"), city, state and zip.
Administer Per (time unit)	12	RE/C	C			00354	20	ST	• Is dependent on the value in RXA-5.
Substance Lot Number	15	RE				01129	20	ST	• This field contains the manufacturer's lot number for the vaccine administered. • ShowMeVax does **not** support repetition of this field. Occurrences other than the first will be ignored.
Substance Expiration Date	16	RE				01130	26	TS	• ShowMeVax will only use the date-released portion of this field. • ShowMeVax does **not** support repetition of this field. Occurrences other than the first will be ignored.
Substance Manufacturer Name	17	RE			0227	01131	60	CE	• Contains the manufacturer of the vaccine administered (see Table 0227). HL7 specification recommends use of the external MVX code, and as a result, ShowMeVax

FIELD NAME	FLD #	MO RQ'D	CDC RQ'D	Re-peats	Table	Item	Len	DT	NOTES
									requires that the coding system component of the CE field be valued as "MVX" (see Table 0396). • ShowMeVax does **not** support repetition of this field. Occurrences other than the first will be ignored. • RXA-17 example: |AB^Abbott Laboratories^MVX|
Substance Refusal Reason	18	RE			NIP 002		200	CE	• If applicable, contains the reason the patient refused the medical substance. • ShowMeVax does **not** support repetition of this field. Occurrences other than the first will be ignored.
Action Code-RXA	21	RE			0323	01224	2	ID	• This field will be ignored by ShowMeVax.
RXR Segment (Optional segment)									
Route	1	R	R		0162	00309	60	CE	• This field is the route of administration. • ShowMeVax will ignore any data in this field that is not a valid route (See Table HL7-0162).
Site	2	RE			0163	00310	60	CE	• This field is the site of the route of administration. • ShowMeVax will ignore any data in this field that is not a valid site.
OBX Segment (Optional segment)									
Set ID - OBX	1	RE				00569	4	SI	• ShowMeVax expects systems submitting VXU messages to use the standard numbering approach defined in the CDC Immunization Implementation Guide.
Value Type	2	R	C			00570	3	ID	• ShowMeVax expects this field to have the value "CE". Otherwise, the OBX segment will be ignored.

FIELD NAME	FLD #	MO RQ'D	CDC RQ'D	Re-peats	Table	Item	Len	DT	NOTES
Observation Identifier	3	R	R			00571	80	CE	• ShowMeVax will accept any valid value for this field, however, only the messages that contain the following LOINC ShowMeVax code will be processed: 30945-0^Vaccination contradiction ^LN • OBX segments with any other LOINC code values will be ignored.
Observation Sub-ID	4		C			00572	20	ST	• ShowMeVax will ignore any value supplied in this field.
Observation Value	5	R	C			00573	65536	CE	• ShowMeVax requires the data type to be "CE". • Valid values for this field that are associated with OBX-3 are contained in the NIP-004 Table.
Observ Result Status	11	R	R		0085	00579	1	ID	• ShowMeVax expects this field to always have a value of "F". • ShowMeVax will ignore any other value and continue processing the message as if an "F" had been received.
Date/Time of the Observation	14	RE				00582	26	TS	• Must provide this field if available.
NTE Segment (not processed by ShowMeVax)									

Exhibit 8: Reference Information for VXU Message

ACK - Acknowledgement Message

ACK messages will not be generated related to the submission of a VXQ.

An ACK message will be generated to acknowledge the receipt of non-batch submitted VXUs. ACKs so generated will not indicate whether the message has any errors, merely that the VXU was received. ACK messages will not be generated for VXU messages received in batch.

FIELD NAME	FLD #	MO RQ'D	CDC RQ'D	Re-peats	Table	Item	Len	DT	NOTES
MSH Segment									
Field Separator	1	R	R			00001	1	ST	• ShowMeVax will always use the pipe character ("|") as the field separator for all HL7 messages.
Encoding Characters	2	R	R			00002	4	ST	• ShowMeVax will always put a value of "^~\&" in this field.
Sending Application	3	R				00003	180	HD	• This field identifies the sending application among all other applications within the sender's network enterprise. The network enterprise consists of all the applications that participate in the exchange of HL7 messages within the enterprise. Immunization providers may use this field to identify their software name and version. • "SHOWMEVAX" is to be used for immunization responses being sent from the State of Missouri immunization registry.
Sending Facility	4	R				00004	180	HD	• This field uses a name, identifier, and identifier type to identify the facility where the data contained in this individual message originated (i.e., the "owner" of the message information). • "MODHSS" is to be used for immunization responses being sent from the State of Missouri immunization registry.
Receiving Application	5	R				00005	180	HD	• This is the same value that was in the Sending Application on the corresponding VXU.

FIELD NAME	FLD #	MO RQ'D	CDC RQ'D	Re-peats	Table	Item	Len	DT	NOTES
Receiving Facility	6	R				00006	180	HD	• This is the same value that was in the Sending Facility on the corresponding VXQ.
Date/Time of Message	7	R				00007	26	TS	• Date/time the sending system created the message. The typical HL7 Time stamp (TS) data type is defined to be in the format: YYYY[MM[DD[HHMM[SS[.S[S[S[S]]]]]]]][+/-ZZZZ]^<degree of precision>
Message Type	9	R	R		HL7-0076 HL7-0003	00009	7	CM	• The receiving system uses this field to know the data segments to recognize and, possibly, the application to which to route this message. Within HL7, the triggering event is considered to be the real-world circumstance causing the message to be sent. The second component is not required on acknowledgment messages. The third component is not required for immunization registries, since in the VXQ, VXR, VXX, and VXU messages; the structure is the same designation as the trigger event type shown in component two. • The specific components of fields using the CM data type are defined within the field descriptions: The components for this field are: <message type (ID)>^<trigger event (ID)>^<message structure (ID)> • Refer to HL7 Table 0076 - Message type, HL7 Table 0003 - Event type, and HL7 Table 0354 - Message structure for values. • The unsolicited transmission of a vaccination record update message would appear as: |VXU^V04|. • The unsolicited transmission of an observation

FIELD NAME	FLD #	MO RQ'D	CDC RQ'D	Re-peats	Table	Item	Len	DT	NOTES
									message, such as a VAERS report, would appear as: |ORU^R01|. • In acknowledgement messages, the value "ACK" is sufficient and the second component may be omitted. |ACK|
Message Control ID	10	R	R			00010	20	ST	• This field uniquely identifies the message. The receiving system echoes this ID back to the sending system in the message acknowledgment segment (MSA). Many facilities simply use a Date/Time stamp plus a sequentially assigned number. For example: ShowMeVax could use "YYYYMMDDMO999999" in this field. The value can be interpreted as: – YYYYMMDD = current system date when query was executed – MO = 2 character abbreviation for Missouri – 999999 = sequential number indicating the number of HL7 messages sent from ShowMeVax on the indicated date.
Processing ID	11	R	R			00011	3	PT	• Used to indicate how to process the message as defined in HL7 processing rules. See Table 0103 for valid values.
Version ID	12	R	R		HL7-0104	0012	60	VID	• Matched by the receiving system to its own HL7 version to be sure the message will be interpreted correctly. Use a value of "2.3.1" to indicate HL7 Version 2.3.1.
MSA Segment (this segment will not be generated by ShowMeVax)									
ERR Segment (this segment will not be generated by ShowMeVax)									

Exhibit 10: Reference Information for ACK Message

QCK - Query General Acknowledgement Message

The QCK message is a specialized instance of the ACK message that is only used when ShowMeVax has received and successfully processed a VXQ message but does not find any matching records (or finds more than 10). Exhibit 11 contains notes for various fields as they pertain to ShowMeVax.

FIELD NAME	FLD #	MO RQ'D	CDC RQ'D	Re-peats	Table	Item	Len	DT	NOTES
MSH Segment									
Field Separator	1	R	R			00001	1	ST	• ShowMeVax will always use the pipe character ("|") as the field separator for all HL7 messages.
Encoding Characters	2	R	R			00002	4	ST	• ShowMeVax will always put a value of "^~\&" in this field.
Sending Application	3	R				00003	180	HD	• This field identifies the sending application among all other applications within the sender's network enterprise. The network enterprise consists of all the applications that participate in the exchange of HL7 messages within the enterprise. Immunization providers may use this field to identify their software name and version. • "SHOWMEVAX" is to be used for immunization responses being sent from the State of Missouri immunization registry.
Sending Facility	4	R				00004	180	HD	• This field uses a name, identifier, and identifier type to identify the facility where the data contained in this individual message originated (i.e., the "owner" of the message information). • "MODHSS" is to be used for immunization responses being sent from the State of Missouri immunization registry.
Receiving Application	5	R				00005	180	HD	• This is the same value that was in the Sending Application on the corresponding VXQ.

FIELD NAME	FLD #	MO RQ'D	CDC RQ'D	Re-peats	Table	Item	Len	DT	NOTES
Receiving Facility	6	R				00006	180	HD	• This is the same value that was in the Sending Facility on the corresponding VXQ.
Date/Time of Message	7	R				00007	26	TS	• Date/time the sending system created the message. The typical HL7 Time stamp (TS) data type is defined to be in the format: YYYY[MM[DD[HHMM[SS[.S[S[S[S]]]]]]]] [+/-ZZZZ]^<degree of precision>
Message Type	9	R	R		0076 0003	00009	7	CM	• The receiving system uses this field to know the data segments to recognize and, possibly, the application to which to route this message. Within HL7, the triggering event is considered to be the real-world circumstance causing the message to be sent. The second component is not required on acknowledgment messages. The third component is not required for immunization registries, since in the VXQ, VXR, VXX, and VXU messages; the message structure is the same designation as the trigger event type shown in component two. • The specific components of fields using the CM data type are defined within the field descriptions: The components for this field are: <message type (ID)>^<trigger event (ID)>^<message structure (ID)> • Refer to HL7 Table 0076 - Message type, HL7 Table 0003 - Event type, and HL7 Table 0354 - Message structure for values. • The unsolicited transmission of a vaccination record update message would appear as:

FIELD NAME	FLD #	MO RQ'D	CDC RQ'D	Re-peats	Table	Item	Len	DT	NOTES
									|VXU^V04|. • The unsolicited transmission of an observation message, such as a VAERS report, would appear as: |ORU^R01|. • In acknowledgement messages, the value "ACK" is sufficient and the second component may be omitted. |ACK|
Message Control ID	10	R	R			00010	20	ST	• This field uniquely identifies the message. The receiving system echoes this ID back to the sending system in the message acknowledgment segment (MSA). Many facilities simply use a Date/Time stamp plus a sequentially assigned number. For example: ShowMeVax could use "YYYYMMDDMO999999" in this field. The value can be interpreted as: – YYYYMMDD = current system date when query was executed – MO = 2 character abbreviation for Missouri – 999999 = sequential number indicating the number of HL7 messages sent from ShowMeVax on the indicated date.
Processing ID	11	R	R			00011	3	PT	• Used to indicate how to process the message as defined in HL7 processing rules. See Table 0103 for valid values.
Version ID	12	R	R		0104	0012	60	VID	• Matched by the receiving system to its own HL7 version to be sure the message will be interpreted correctly. Use a value of "2.3.1" to indicate HL7 Version 2.3.1.
MSA Segment									
Acknowledgment Code	1	R	R		0008	00018	2	ID	• ShowMeVax will always respond using the original acknowledgement mode.

FIELD NAME	FLD #	MO RQ'D	CDC RQ'D	Re-peats	Table	Item	Len	DT	NOTES
									• ShowMeVax will only respond with a QCK message when the message was processed without error but no matching records were found. Therefore, the only value that will be used here is "AA".
Message Control ID	2	R	R			00010	20	ST	• ShowMeVax will always put the value of the "Message Control ID" field in the MSH segment of the corresponding VXQ message in this field.
ERR Segment									
Error Code and Location	1	R	R	Y	0357	00024	80	CM	• ShowMeVax will include the relevant segment, sequence and field position of the error, along with the applicable indicator from table "HL70357" for the error encountered while processing the message.
QAK Segment(this segment will not be generated by ShowMeVax)									

Exhibit 11: Reference Information for QCK Message

MESSAGE PROCESSING DESIGN

Real-time Query Processing

RI-010 - Registry Query (VXQ)

RI-010.1 - Receive Provider Query Message

Processing Rules

Healthcare providers can issue real-time messages using one of two protocols: SOAP and HTTP POST. These messages will be received by DHSS using an external web service (EWS). The messages so received will contain a single HL7 VXQ (Registry Query) message. The EWS will perform provider authentication against Active Directory using the inbound User Id and AD Password. This external web service will include the following functionality:

1.1. Receive provider VXQ message
1.2. Identify protocol type (SOAP or HTTP POST).
  1.2.1. If the message cannot be identified as either protocol type, make an entry in the HL7 Web Service Error Log and cease processing.
1.3. Parse Message:
  1.3.1 Remove (parse out) SOAP components of the message based on protocol type.
  1.3.2 Remove (parse out) HTTP components of the message based on protocol type.
  1.3.3 If any of the required components (Userid, AD password, DB password, Facility Id, and Message) are missing, make an entry in the HL7 Web Service Error Log and cease processing.
1.4. Perform provider authentication against Active Directory.
  1.4.1. If the Active Directory authentication fails, make an entry in the HL7 Web Service Error Log and cease processing.
1.5. If authenticated, pass the VXQ-HL7 to Step RI-010.2. Otherwise, terminate processing.
1.6. If the EWS encounters a "timeout" condition, the following will occur:
  1.6.1 The submitted VXQ-HL7 message will be logged in the HL7 Web Service Error Log with the appropriate "timeout" error code.
  1.6.2 The session initiated by the VXQ will be terminated.
  1.6.3 A timeout message will not be transmitted to the provider – the session merely expires.

Input

Provider Message. See Message Translation (Web Service vs. HTTPS) for input format considerations.

Output

Parsed VXQ Message. Remove (parse out) the SOAP or HTTP components of the provider message, passing the following items to Step RI-010.2: USERID, ADPASSWORD, DBPASSWORD, FACILITYID, MESSAGEDATA (VXQ-HL7 message in its entirety).
HL7 Web Service Error Log entry. Record timestamp, facility id, and error message. If facility id is not available, record IP address instead.

RI-010.2 – Pass Query Message to Rhapsody

Processing Rules

In this step, the Internal Web Service (IWS) processes the parsed VXQ message received from Step RI-010.1 and initiates a request to Rhapsody to translate the VXQ into an internal format (pipe delimited string – PDS). The processing rules for this step are:

2.1 Receive the Parsed VXQ message and provider identification fields passed from Step RI-010.1.
2.2 If the call to the IWS fails, make an entry in the HL7 Web Service Error Log and cease processing.
2.3 The IWS will invoke the Rhapsody ASP.Net assembly defined in Step RI-010.3 to convert the VXQ message from HL7 format to a PDS text string.

Input

Parsed VXQ Message. Same as Output from Step RI-010.1 above.

Output

VXQ-HL7 Message. Same as the Parsed VXQ Message, excluding USERID, PASSWORDs and FACILITY ID provided as part of the SOAP or HTTP string.
HL7 Web Service Error Log entry. Record timestamp, facility id, and error message.

RI-010.3 - Translate Query Message

Processing Rules

The purpose of this step is to convert the HL7 message received from Step RI-010.2 into a format recognizable by Oracle to query the ShowMeVax database. Rhapsody is used to perform this conversion.

3.1 Execute the Rhapsody ASP.Net assembly used to receive a VXQ message.
3.2 Archive the message in the MESSAGE_ARCHIVE table.
3.3 Conduct Rhapsody routine to translate the VXQ-HL7 into a format acceptable to the Oracle database management system.
3.4 If Rhapsody identifies formatting and content errors in the VXQ message, a message is entered in the MESSAGE_ERROR table. Processing ceases and no return message is generated.
3.5 If the VXQ does not have any formatting errors, Rhapsody will convert the message from HL7 format to a Pipe Delimited String (PDS) text string. This PDS string will only include those fields required to perform the search functions in Step RI-010.5 or to build the resulting return message (e.g., VXR, VXX, and QCK).
3.6 After the VXQ message has been reformatted, control returns to the IWS, triggering Step RI-010.4.

Input

VXQ-HL7 Formatted Message. Same as Output from Step RI-010.2 above.

Output

VXQ-PDS Message. PDS reformatted VXQ record which includes each message segment included in HL7 version of this message, but only the required fields.

ShowMeVax MESSAGE_ARCHIVE Table. Archive all VXQ-HL7 messages that make it to Rhapsody.
ShowMeVax MESSAGE_ERROR Table. Store error messages generated by Rhapsody.

RI-010.4 - Initiate Database Procedure

This function within the IWS, initiates a procedure call (query) to Oracle that includes the VXQ-PDS text string.

Processing Rules

4.1 Initiate call to search (Step RI-010.5) for person defined by the VXQ-PDS message.
4.2 If the call to the database fails, a message is entered in the HL7 Web Service Error Log. Processing ceases and no return message is generated.

Input

VXQ-PDS Message. PDS reformatted VXQ record which includes each message segment included in HL7 version of this message, but only the required fields.

Output

VXQ-PDS Message. Same as Input.
HL7 Web Service Error Log entry. Record timestamp, facility id, and error message generated by database call.

RI-010.5 - Search Database

ShowMeVax will attempt to locate client records using the guidelines below.

Processing Rules - Narrative

Special Consideration. ***ShowMeVax records marked for deletion or as inactive will be excluded as possible matches throughout this process.***
A. **Patient State Registry ID Search**. If the Patient State Registry ID (from QRD-8, where Identifier Type Code is SR) is provided, the system will determine if the individual with the specified Patient State Registry ID has a ShowMeVax record. If a single record is found, processing continues with Step E (E1). Otherwise processing continues with Step B.
B. **Local Patient Identifier Search (Provider's Patient ID)**. If the Local Patient Identifier (from QRD-8, where Identifier Type Code is PI) is provided, the system will search the ShowMeVax database for an immunization record that matches the Provider ID and provider patient identifier combination. If a single record is found with the given Provider ID/provider patient identifier combination, the database search function continues with Step E (E2). Otherwise, the processing continues with Step C.
C. **Medicaid Number (Same as Missouri's DCN) Search**. If a DCN (QRF-5.5, see Exhibit 5.1) is provided, the system will determine if the individual with the specified DCN has a ShowMeVax record. If a single record is found with the given DCN the database search function continues with Step E (E3). Otherwise, processing continues with Step D.

D. **SSN (Social Security Number) Search**. If the client's SSN (QRF-5.1, see Exhibit 5.1) is provided, the system will determine if the individual with the specified SSN has a ShowMeVax record. If a single record is found with the given SSN the database search function continues with Step E (E4). Otherwise, processing continues with Step F.

E. **Secondary Reasonableness Check**. If Step A, B, C or D results in a single match, a secondary reasonableness check is performed, whereby the inbound record and the database record must match on at least two(2) of the following criteria:

- Patient/client Birth Year and Birth Month
- Soundex on Mother's Maiden Name
- Soundex of Client's First Name and Client's Last Name
- SSN, DCN, or Local Patient Identifier (Provider's Patient ID) – other than the one successfully matched in Steps A – D.

If this secondary check is successful, processing continues with Step G. Otherwise, processing continues with Step B, C, D or F, depending on whether Step E was entered from Step A, B, C or D. This is depicted in the flow diagram by having separate steps E1, E2, E3 and E4, all described here as Step E.

F. **Name & DOB Search**. The System will look for a record where there is a precise match by applying all of the following criteria:

- First and Last name supplied match the patient's name, the patient's alias name, or the patient's birth record name in ShowMeVax.
- The Date of Birth supplied matches the patient's DOB in ShowMeVax.

If this search identifies a single matching record, then processing continues with Step G. If two to ten possible matches are found, processing continues with Step I, otherwise processing continues with Step H.

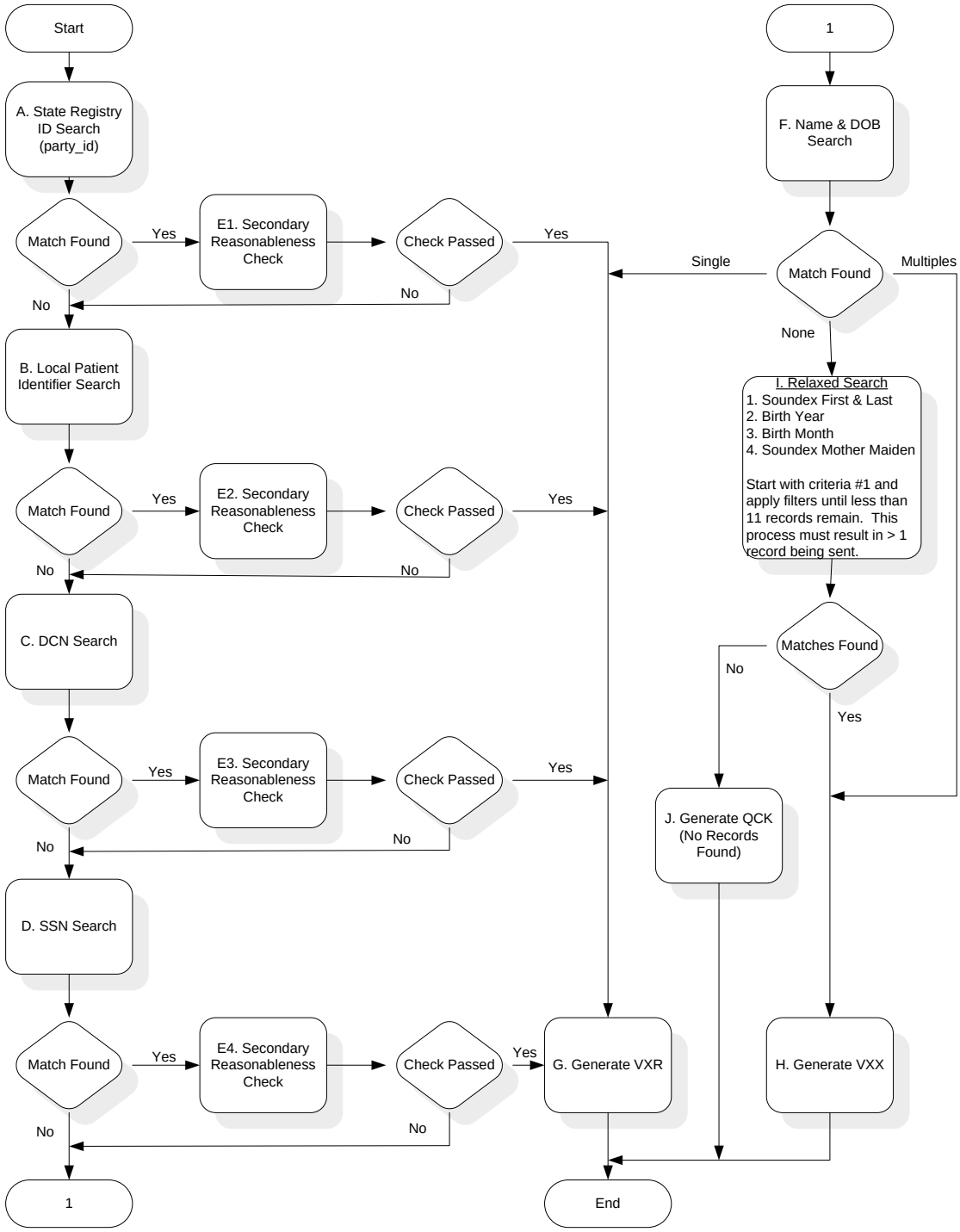
G. **Generate VXR.** At this point the VXQ data has resulted in finding a single valid individual's immunization record resulting in the generation of a VXR record with control returning to the Internal Web Service initiated in Step RI-010.4.

The generated VXR will include personal information regarding the individual. It will also include all (one or more) of the administered immunizations for the individual.

H. **Relaxed Search**. The purpose of this step is to identify a list of clients who satisfy a broader range of criteria than those specified in Steps A – F, whenever a single record match or a list of two to ten possible matches is not produced via those steps. This process is cumulative. That is, each filter, other than the first (H.1), is applied solely to the results from the preceding filter. The following filters will be applied in the order indicated until either ten or fewer client records satisfy the criteria, or until all filters have been applied:

	Filter H.1 Soundex on Client's First and Last Names H.2 Client's Birth Year H.3 Client's Birth Month H.4 Soundex on Mother's Maiden Name • If the results of a given filter (H.1 – H.4) include from two to ten records, the search is deemed complete and processing continues with Step I - Generate VXX, Multiple Records Match. • If any filter results in fewer than two records being returned or if the last filter (H.4) results in more than ten records being returned, then processing terminates with Step J - Generate QCK, No Records Found.
I.	**Generate VXX, Multiple Records Match.** If two to ten records remain in the result set after Step F or Step H, then a VXX record is generated with control returning to the Internal Web Service initiated in Step RI-010.4. If the provider specifies a limit that is less than ten, that limit will be applied rather than the ShowMeVax default limit of ten.
J.	**Generate QCK, No Records Found**. This step creates a QCK message when neither a single matching client record nor a list of two to ten possible matches is found in Steps A - H. Control is returned to the Internal Web Service initiated in Step RI-010.4.

Processing Rules – Flow Diagram



Input

VXQ-PDS Message. PDS reformatted VXQ record includes each message segment included in the HL7 version of this message, but only the required fields.

Output

- **XML Formatted Messages.** The XML messages will be formatted such that the "Required" and the "Required if available" fields are in the same sequence as in the corresponding HL7 message, with non-required fields being omitted entirely. There are three possible outputs (Error Processing Message (ACK) will not be generated by this process).
    - Single Match (VXR-XML)
    - Multiple Records Found (VXX-XML)
    - No Record Found (QCK-XML)

RI-040 - Single Record Match (VXR)

This function processes a single matched record (VXR) resulting from a provider who submitted an immunization query (VXQ), reformats the record into HL7 format and returns the HL7 VXR message to the submitting provider.

RI-040.1 - Process Single Record Match XML Formatted Record

1. The IWS that passed the associated VXQ to Oracle for processing receives the corresponding internal single immunization message (VXR-XML) for conversion to HL7 format.
2. The IWS passes the VXR-XML record to Rhapsody, including the original Message Control ID that uniquely identifies the message and makes it possible to send the VXR to the submitting provider.

RI-040.2 - Translate Single Record Match XML Formatted Record into HL7 Format

1. Rhapsody receives the XML version of the returning VXR record.
2. Rhapsody converts the VXR record from XML format into HL7 format, ensuring the same Message Control ID is included in the HL7 message in the MSA-2 field.
3. Upon conversion, Rhapsody returns the VXR-HL7 message to the IWS.

RI-040.3 - Return Message to EWS

1. The IWS receives the formatted VXR-HL7 message from Rhapsody.
2. The IWS passes the message to the EWS that received the originating and corresponding VXQ message.

RI-040.4 - Return the VXR Message to the Submitting Provider

1. The EWS receives the formatted VXR-HL7 message, and packages it in the correct protocol (SOAP or HTTP POST), depending on how the original VXQ was transmitted.
2. The VXR-HL7 message is transmitted to the provider who submitted the corresponding VXQ.
3. **Special Considerations**.
    a) The EWS will be responsible for monitoring and controlling message responsiveness. This will be achieved by terminating any VXQs for which it does not receive a VXR, VXX, or QCK message within 60 seconds. EWS will NOT generate an ACK notifying the provider of the timeout. The provider's software is to include this functionality for its internal purposes with its own internal parameters for assessing timeout.
    b) All returned messages will exclude the initiating message, but will include the Message Control ID of the initiating HL7 message - stored in VXR, MSA-2.

RI-020 - Multiple Records Match (VXX)

This function generates Multiple Records Match messages (VXX) resulting from a provider submitted immunization query (VXQ). Through a sequence of translations, data generated from the ShowMeVax database is formatted as an HL7 format message using either the SOAP or HTTP POST protocol.

RI-020.1 - Process Multiple Record Match XML Formatted Record

1. The IWS that passed the associated VXQ to Oracle for processing receives the corresponding internal multiple immunization record (VXX-XML) for conversion to HL7 Format.
2. The IWS passes the VXX-XML record to Rhapsody that includes the original Message Control ID that uniquely identifies the message and makes it possible to send the VXX to the submitting provider.

RI-020.2 - Translate Multiple Record Match XML Formatted Record into HL7 Format

1. Rhapsody receives the XML version of the returning VXX record.
2. Rhapsody converts the VXX record from XML format into HL7 format, ensuring the same Message Control ID is included in the HL7 message in the MSA-2 field.
3. Upon conversion, Rhapsody returns the VXX-HL7 message to the IWS.

RI-020.3 - Return Message to EWS

1. The IWS receives the formatted VXX-HL7 message from Rhapsody.
2. The IWS passes the message to the EWS that received the originating and corresponding VXQ message.

RI-020.4 - Return the VXX Message to the Submitting Provider

1. The EWS receives the packaged VXX-HL7 message, and packages it in the correct protocol (SOAP or HTTP POST), depending on how the original VXQ was transmitted.
2. The VXX-HL7 message is transmitted to the provider who submitted the corresponding VXQ.
3. **Special Considerations**.
   a) The EWS will be responsible for monitoring and controlling message responsiveness. This will be achieved by terminating any VXQs for which it does not receive a VXR, VXX, or QCK within 60 seconds. EWS will NOT generate an ACK notifying the provider of the timeout. The provider's software is to include this functionality for its internal purposes with its own internal parameters for assessing timeouts.
   b) All returned messages will exclude the initiating message, but will include the Message Control ID of the initiating HL7 message - stored in VXX, MSA-2 field.

RI-030 - No Match (QCK)

This function encompasses the processing of the "No Record Found" messages resulting from a provider supplied VXQ where there are no records or more than ten records in the database that satisfy the provider specified parameters.

RI-030.1 - Process No Record Found XML Formatted Record

1. The IWS that passed the associated VXQ to Oracle for processing receives the corresponding QCK-XML record for conversion to HL7 format.
2. The IWS passes the QCK-XML record to Rhapsody, including the original Message Control ID that uniquely identifies the message and makes it possible to send the QCK to the submitting provider.

RI-030.2- Translate Single Record Match XML Formatted Record into HL7 Format

1. Rhapsody receives the XML version of the returning QCK record.
2. Rhapsody converts the QCK record from XML format into HL7 format, ensuring the same Message Control ID is included in the HL7 message in the MSA-2 field.
3. Upon conversion, Rhapsody returns the QCK-HL7 message to the IWS.

RI-030.3 - Return Message to EWS

1. The IWS receives the formatted QCK-HL7 message from Rhapsody.
2. The IWS passes the message to the EWS that received the originating and corresponding VXQ message.

RI-030.4 - Return the QCK Message to the Submitting Provider

1. The EWS receives the packaged QCK-HL7 message, and packages it in the correct protocol (SOAP or HTTP POST).
2. The VXX-HL7 message is transmitted to the provider who submitted the corresponding VXQ.
3. **Special Considerations**.
   c) The EWS will be responsible for monitoring and controlling message responsiveness. This will be achieved by terminating any VXQs for which it does not receive a VXR, VXX, or QCK message within 60 seconds. EWS will NOT generate an ACK notifying the provider of the timeout. The provider's software is to include this functionality for its internal purposes with its own internal parameters for assessing timeouts.
   d) All returned messages will exclude the initiating message, but will include the Message Control ID of the initiating HL7 message - stored in QCK, MSA-2 field.

Immunization Records Update Process

This function includes the ability to receive immunization record updates (VXU) messages in either real-time or batch mode, then to apply these updates to the ShowMeVax database during a single batch process executed nightly.

RR-010.1 - Receive Provider Immunization Record

Processing Rules

In this mode, the healthcare provider transmits immunization update messages (VXUs) one at a time. As a result, such transmissions will exclude header and trailer message segments. Like with the VXQ message, the provider will be able to transmit their messages using one of two protocols: SOAP and HTTP POST. This program (the same EWS developed for Step RI-010.1) will include the following functionality:

1. Receive single provider VXU message.
2. Identify protocol type (SOAP or HTTP POST). If the message cannot be identified as either protocol type, make an entry in the HL7 Web Service Error Log and cease processing.
3. Remove (parse out) the SOAP or HTTP POST components of the provider message.
4. If any of the required components (Userid, AD password, DB password, Facility Id, and Message) are missing, make an entry in the HL7 Web Service Error Log and cease processing.
5. Perform provider authentication against Active Directory. If the Active Directory authentication fails, make an entry in the HL7 Web Service Error Log and cease processing.
6. If authenticated, pass the VXU-HL7 to Step RR-010.3 for Rhapsody processing.
7. If the EWS encounters a "timeout" condition, make an entry in the HL7 Web Service Error Log and cease processing. A timeout message will not be transmitted to the provider – the session merely expires.

Input

Single Provider VXU-HL7 Message. See Message Translation (Web Service vs. HTTPS) for input format considerations.

Output

VXU-HL7 Message. Single VXU message in HL7 format passed to Rhapsody.
HL7 Web Service Error Log entry. Record timestamp, facility id, and error message. If facility id is not available, record IP address instead.

RR-010.2 - Multiple Provider Immunization Records

Processing Rules

In this mode, the healthcare provider transmits multiple immunization update messages (VXUs) as a group (as a batch). As a result, such transmissions will include header and trailer message segments. Each batch file will be received via SFTP. This program will include the following functionality:

1. Receive provider batch of VXU messages.
2. Send entire batch/file of VXU messages to Rhapsody for archiving and translation.

3. Processing continues with Step RR-010.4.

Input

Batched Provider VXU-HL7 Messages. See Batch Files of HL7 Messages in Appendix F for input format considerations.

Output

VXU-HL7 Messages. Batch of VXU messages in HL7 format passed to Rhapsody.

RR-010.3 – Send ACK Acknowledgement Message

Processing Rules

If a single VXU-HL7 message is received from Step RR-010.1, an ACK general acknowledgement message will be returned by Rhapsody. This ACK message will not imply or guarantee that the VXU message contents will be applied to ShowMeVax. The functionality of this step includes:

1. Receive VXU-HL7 message.
2. Return an ACK-HL7 general acknowledgement message.
3. Processing continues with Step RR-010.4.

Input

VXU-HL7 Message. Single VXU message in HL7 format.

Output

VXU-HL7 Message. Single VXU message in HL7 format.
ACK-HL7 Message. An ACK general acknowledgement message in HL7 format.

RR-010.4 - Archive VXU-HL7 Message

Processing Rules

This step archives the VXU-HL7 messages as received by Rhapsody. If a batch is received, it is archived first as a single entity. Then, Rhapsody will archive individual VXUs one at a time. The functionality of this step includes:

1. Receive VXU-HL7 message.
2. If message is a file/batch, archive the entire message.
3. Archive each individual VXU-HL7 message.
4. Processing continues for each individual VXU-HL7 message, one at a time, with Step IU-010.

Input

VXU-HL7 Messages. VXU message (single or batch) in HL7 format passed from Step RR-010.3 or Step RR.010.2

Output

ShowMeVax MESSAGE_ARCHIVE Table. Archive of VXU-HL7 messages received.
VXU-HL7 Message. A single VXU message in HL7 format.

IU-010 - Translate VXU-HL7 Message

Processing Rules

This step attempts to convert each VXU-HL7 message from HL7 format and place it in the HL7_SMV schema holding tables. VXU-HL7 messages that cannot successfully be translated are placed in a separate table (MESSAGE_ERROR) for subsequent consideration. The functionality of this step includes:

1. Receive VXU-HL7 message.
2. Attempt translation of VXU according to specifications provided in HL7 Message Definitions – VXU.
3. If translation fails, log the error in ShowMeVax error table MESSAGE_ERROR.
4. If translation is successful, place the VXU data in the ShowMeVax HL7_SMV schema holding tables .
5. Processing continues with Step IU-020.

Input

VXU-HL7 Messages. VXU message in HL7 format passed to Rhapsody generated in Step RR.010.1 and Step RR.010.2

Output

ShowMeVax HL7_SMV schema holding tables. Successfully translated VXU messages.
ShowMeVax MESSAGE_ERROR Table. Error messages for VXU messages that failed translation.

IU-020 - Data Validation Check

Processing Rules

In this step, the translated VXU messages are read from the HL7_SMV schema holding tables updated in Step IU-010. Additional validation or edits are performed on each message to help validate the quality of the data submitted. Any VXU that fails one or more of these validity checks is moved to the HL7_SMV schema error tables for subsequent reconciliation. Each VXU that passes all the validity checks moves on to the next step. The functionality of this step includes:

1. Read new VXUs from HL7_SMV schema holding tables
2. Perform additional validation.
3. If VXU fails a single validity check, then move the message to the HL7_SMV schema error tables and terminate processing of the message.
4. Processing continues with Step IU-030.

Input

ShowMeVax HL7_SMV schema holding tables. Successfully translated VXU messages.

Output

ShowMeVax HL7_SMV schema error tables. VXU messages that failed validation check.

IU-030 - Search for Existing Patient

Processing Rules

In this step, the ShowMeVax database is searched to determine whether the patient on the VXU already exists in the database. If there is a single match (patient exists in ShowMeVax), the VXU may be used to update ShowMeVax. If there is no match, then the patient is a new patient, and the VXU may be added to ShowMeVax. If there are multiple matches, the VXU is moved to the HL7_SMV schema error tables for subsequent reconciliation. The functionality of this step includes:

1. Continue processing the VXU record from the ShowMeVax HL7_SMV schema holding tables that just passed the data validation check in Step IU-020.
2. Using a search similar to that for VXQ messages in Step RI-010.5, determine whether there is a match in the ShowMeVax database.
3. If a single match is found, the existing patient's records may be updated. Processing continues with Step IU-040,
4. If no match is found, a new patient may be added to ShowMeVax. Processing continues with Step IU-050.
5. If multiple matches are found, then move the message to the HL7_SMV schema error tables and terminate processing of the message.

Input

ShowMeVax HL7_SMV schema holding tables. Successfully validated VXU messages.

Output

ShowMeVax HL7_SMV schema error tables. VXU messages that could not be attributed to a new patient or to a single existing patient.

IU-040 - Duplicate Records Check

Processing Rules

In this step, immunizations recorded in VXU messages that were matched to a single existing patient in ShowMeVax are interrogated for possible duplication. Any immunization that is found to be a duplicate is moved to the HL7_SMV schema error tables for subsequent reconciliation. Each immunization that is not a duplicate moves on to the next step. The functionality of this step includes:

1. Continue processing the VXU record from the ShowMeVax HL7_SMV schema holding tables that was just matched to a single existing ShowMeVax patient in Step IU-030.
2. Using the logic represented in Appendix G - Duplicate Shot Processing, **for each immunization** in the VXU message, assess whether the corresponding immunization is already in the ShowMeVax database.
3. If the immunization is determined to already exist, then move the immunization to the HL7_SMV schema error tables and terminate processing of the immunization.
4. Processing continues with Step IU-050.

Input

ShowMeVax HL7_SMV schema holding tables. VXU messages that were attributed to a single existing patient.

Output

ShowMeVax HL7_SMV schema error tables. VXU messages that failed duplication check.

IU-050 - Update Database

Processing Rules

In this step, VXU messages received from Steps IU-030 and IU-040 are applied to the ShowMeVax database. Each VXU/immunization that is successfully added to the database is moved to the HL7_SMV schema processed tables. The functionality of this step includes:

1. Continue processing the VXU record from the ShowMeVax HL7_SMV schema holding tables that was just processed in Step IU-030 or Step IU-040.
2. Attempt to update the ShowMeVax database with patient and immunization data.
3. If there is an error while updating the ShowMeVax database, then move the message to the HL7_SMV schema error tables and terminate processing of the message.
4. Move the HL7_SMV schema holding table contents for this VXU to the HL7_SMV schema processed tables.

Input

ShowMeVax HL7_SMV schema holding tables. VXU messages for a new or existing patient.

Output

ShowMeVax Database. Updated and added immunization registry records.
ShowMeVax HL7_SMV schema error tables. VXU messages that failed to be applied to the database.
ShowMeVax HL7_SMV schema processed tables. VXU messages that were used to update ShowMeVax.

APPENDICES

Term	Description
American Immunization Registry Association (AIRA)	AIRA is an organization established to advance the development and implementation of automated systems related to immunization records management, and as a result, an important mechanism to assist in the prevention and control of vaccines that help minimize the spread of diseases.
Bureau of Immunization Assessment and Assurance (BIAA)	BIAA is the Missouri agency responsible for managing immunization related initiatives as well as the State's immunization registry (ShowMeVax).
Component	A component is one of a logical grouping of items that comprise the contents of a coded or composite field. Within a field having several components, not all components are required to be valued.
Data type	A data type restricts the contents and format of the data field. Data types are given a 2- or 3-letter code. Some data types are coded or composite types with several components. The applicable data type is listed and defined in each field definition. Appendix D provides a complete listing of data types used in this document and their definitions.
Electronic Health Records	"The Electronic Health Record (EHR) is a longitudinal electronic record of patient health information generated by one or more encounters in any care delivery setting. Included in this information are patient demographics, progress notes, problems, medications, vital signs, past medical history, immunizations, laboratory data, and radiology reports. The EHR has the ability to generate a complete record of a clinical patient encounter, as well as supporting other care-related activities."
Empty Fields	The null value is transmitted as two double quote marks (""). A null-valued field differs from an empty field. An empty field should not overwrite previously entered data in the field, while the null value means that any previous value in this field should be overwritten.
Field	A field is a string of characters. Each field is identified by the segment it is in and its position within the segment; e.g., PID-5 is the fifth field of the PID segment. Optional data fields may be omitted. Whether a field is required, optional, or conditional in a segment

Term	Description
	is specified in the segment attribute tables. The designations are: R=Required, O=Optional, C=Conditional on the trigger event or on some other field(s). The field definition should define any conditionality for the field: X=Not used with this trigger event, B=Left in for backward compatibility with previous versions of HL7. A maximum length of the field is stated as normative information. Exceeding the listed length should not be considered an error.
Health Level 7 (HL7)	HL7 is a standardized messaging and text communications protocol for transmitting health related data between hospital systems, physician records management systems, electronic health records systems, public registries and practice management systems. HL7 is widely deployed in various applications to transmit preformatted, encoded health records between automated systems.
IT Accessibility Standards	Missouri's set of standards that are complementary or comparable to ADA's Section 508 standards on automated system accessibility for individuals with disabilities.
Item Number	Each field is assigned a unique item number. Fields that are used in more than one segment will retain their unique item number across segments.
Message	A message is the entire unit of data transferred between systems in a single transmission. It is a series of segments in a defined sequence, with a message type and a trigger event.
Null Fields	See Empty Fields definition
Oracle	The Oracle Database is a relational database management system (RDBMS) that is used to manage and organize application data. Oracle is used by ShowMeVax for storing of immunization records.
Rhapsody	Rhapsody Connect provides a common set of code for translating (decoding and coding) immunization HL7 messages.
Segment	A segment is a logical grouping of data fields. Segments within a defined message may be required or optional, may occur only once, or may be allowed to repeat. Each segment is named and is identified by a segment ID, a unique 3-character code.
ShowMeVax	ShowMeVax is Missouri's automated immunization registry.
TCP/IP	TCP/IP is the acronym for Transmission Control Protocol/Internet Protocol. It a robust

Term	Description
	set of communications protocols used to connect computer across the Internet. It is the most common format for transmitting data over networks.
Vaccines for Children (VFC) Providers	VFC providers are healthcare organizations such as local public health agencies (LPHA), Federally Qualified Health Centers (FQHC), private pediatric and family clinics and private physicians who engage in administering a large number of immunizations annually to children.

Appendix B - References

1. MITRE - Center for Enterprise Modernization, Electronic Health Records Overview, McLean Virginia, 2006, p. 1.
2. Kansas Department of Health and Environment, Immunization Program, Kansas State Immunization Registry, HL-7 Interface Document, V1.4, July, 2008.
3. American Immunization Registry Association, Data Quality Assurance in Immunization Information Systems: Incoming Data, February 11, 2008. http://www.immregistries.org/pubs/mirow.phtml - AIRA-MIROW DQA best practices guide 02-11-2008.doc.
4. American Immunization Registry Association, Vaccination Level De-duplication in Immunization Information Systems, December 7, 2006. http://www.immregistries.org/pubs/mirow.phtml - AIRA best practices guide for vaccination de-duplication 12-07-06.doc.
5. Implementation Guide for Immunization Data Transactions using Version 2.3.1 of the Health Level Seven (HL7) Standard Protocol, Implementation Guide Version 2.2, June 2006
6. HL7 Immunization Message Validation (http://dhss.mo.gov/living/wellness/immunizations/pdf/showmevax_hl7_message_validation.pdf)

Appendix C - Code Tables

These tables are taken from the CDC implementation guide. While some comments specific to ShowMeVax have been added, references to sections and page numbers in a given table entry may point back to the CDC guide.

User-defined Table 0001 - Sex [values suggested by HL7] (use in PID-8, NK1-15)

Value	Description
F	Female
M	Male
O	Other
U	Unknown

HL7-defined Table 0003 - Event type [only selected values listed] (use in MSH-9, second component)

Value	Description
A28	ADT/ACK - Add person information
A29	ADT/ACK - Delete person information
A30	ADT/ACK - Merge person information
A31	ADT/ACK - Update person information
V01	VXQ - Query for vaccination record
V02	VXX - Response to vaccination query returning multiple PID matches
V03	VXR - Vaccination record response
V04	VXU - Unsolicited vaccination record update
R01	ORU – Observation results (Unsolicited)

User-defined Table 0004 - Patient class [values suggested by HL7] (use in PV1-2)

Value	Description
E	Emergency
I	Inpatient
O	Outpatient
P	Preadmit
R	Recurring Patient
B	Obstetrics

User-defined Table 0005 - Race [These values are consistent with the OMB Notice of revised categories for collection of race and ethnicity data—the combined format.] (Use in PID-10, NK1-35)

US race codes (included in HL7 Version 2.4) (entire hierarchical set of codes at http://www.cdc.gov/od/hissb/docs/Race-EthnicityCodeSet.pdf)	**Description**	**NIP original race codes**	**Description**
1002-5	American Indian or Alaska Native	I	American Indian or Alaska Native
2028-9	Asian	A	Asian or Pacific Islander
2076-8	Native Hawaiian or Other Pacific Islander	A	Asian or Pacific Islander
2054-5	Black or African-American	B	Black or African-American
2106-3	White	W	White
2135-2	Hispanic or Latino	H	Hispanic
2186-5	not Hispanic or Latino	N	
2131-1	Other Race	O	Other

	Unknown	U	Unknown

HL7-defined Table 0008 – Acknowledgment code (use in MSA-1)

Value	Description
AA	Original mode: Application Accept Enhanced mode: Application acknowledgment: Accept
AE	Original mode: Application Error Enhanced mode: Application acknowledgment: Error
AR	Original mode: Application Reject Enhanced mode: Application acknowledgment: Reject
CA	Enhanced mode: Accept acknowledgment: Commit Accept
CE	Enhanced mode: Accept acknowledgment: Commit Error
CR	Enhanced mode: Accept acknowledgment: Commit Reject

User-defined Table 0010 - Physician ID (use in all XCN data types; including PV1-7,8,9,17, RXA-10) [locally-defined]. Each registry should establish a system of coding its reporting physicians. The National Provider Identifier (NPI) adopted for the HIPAA legislation is recommended by ShowMeVax.

HL7-defined Table 0048 - What subject filter [only selected values listed] (use in QRD-9)

Value	Description
VXI	Vaccine Information

HL7-defined Table 0061 - Check digit scheme (use in all CX data types; including PID-2,3,4,18,21)

Value	Description
M10	Mod 10 algorithm
M11	Mod 11 algorithm
ISO	ISO 7064: 1983
NPI	Check digit algorithm in the US National Provider Identifier

User-defined Table 0062 - Event reason [values suggested by HL7; with NIP-suggested additions] (use in EVN-4)

Value	Description
01	Patient request
02	Physician order
03	Census management
04	*Add person data to immunization registry*
05	*Delete person data from immunization registry*
06	*Update person data in immunization registry*
07	*Merge person data in immunization registry*

User-defined Table 0063 - Relationship [as defined in HL7's Version 2.4] (use in NK1-3, IN1-17, IN2-62)

Value	Description
ASC	Associate
BRO	Brother
CGV	Care giver
CHD	Child
DEP	Handicapped dependent
DOM	Life partner
EMC	Emergency contact
EME	Employee
EMR	Employer
EXF	Extended family
FCH	Foster child
FND	Friend
FTH	Father
GCH	Grandchild
GRD	Guardian
GRP	Grandparent
MGR	Manager
MTH	Mother
NCH	Natural child
NON	None
OAD	Other adult
OTH	Other
OWN	Owner
PAR	Parent
SCH	Stepchild
SEL	Self
SIB	Sibling
SIS	Sister
SPO	Spouse
TRA	Trainer
UNK	Unknown
WRD	Ward of court
Codes for VAERS reporting only	
VAB	*Vaccine administered by (Name)*
FVP	*Form completed by (Name)--Vaccine provider*
FPP	*Form completed by (Name)--Patient/Parent*
FMN	*Form completed by (Name)—Manufacturer*
FOT	*Form completed by (Name)—Other*

User-defined Table 0064 - Financial class [NIP suggested values] (use in PV1-20)

Value	Description
VFC eligibility codes	
V00	*VFC eligibility not determined/unknown*
V01	*Not VFC eligible*
V02	*VFC eligible - Medicaid/Medicaid Managed Care*
V03	*VFC eligible – Uninsured*
V04	*VFC eligible – American Indian/Alaskan Native*
V05	*VFC eligible – Federally Qualified Health Center Patient (under-insured)*
V06	*VFC eligible - State-specific eligibility (e.g., S-CHIP plan)*
V07	*VFC eligible - Local-specific eligibility*
S-CHIP eligibility codes	
CH00	*S-CHIP coverage-not VFC eligible*
CH01	*S-CHIP coverage-separate from Medicaid-not VFC eligible*
CH02	*S-CHIP coverage-combination of Medicaid and separate-not VFC eligible*
Health plan type codes	
H01	*Self pay*
H02	*Medicaid (may be called by state-specific name, e.g., Medi-Cal)*
H03	*Third party or private insurance*
Insured status	
IS00	*Some or all vaccine costs covered*
IS01	*Underinsured (no vaccine costs covered and not FQC/RHC)*
State program codes - state specific; CDC suggests these to be structured using state 2-letter abbreviation plus a number for the value. Not currently required by ShowMeVax.	

HL7-defined Table 0076 - Message type [only selected values listed] (use in MSH-9, first component)

Value	Description
ACK	General acknowledgment
ADR	ADT response
ADT	ADT message
QCK	Query general acknowledgment
VXQ	Query for vaccination record
VXX	Vaccination query response with multiple PID matches
VXR	Vaccination query record response
VXU	Unsolicited vaccination record update
ORU	Unsolicited observation results

HL7-defined Table 0078 - Abnormal flags [only selected values listed] (use in OBX-8)

Value	Description
L	Below low normal
H	Above high normal
LL	Below lower panic limits
HH	Above upper panic limits
N	Normal (applies to non-numeric results)
A	Abnormal (applies to non-numeric results)
AA	Very abnormal (applies to non-numeric units, analogous to panic limits for numeric units)

HL7-defined Table 0085 - Observation result status codes interpretation (use in OBX-11)

Value	Description
C	Record coming over is a correction and thus replaces a final result
D	Deletes the OBX record
F	Final results; Can only be changed with a corrected result
I	Specimen in lab; results pending
N	Not asked; used to affirmatively document that the observation identified in the OBX was not sought when the universal service ID in OBR-4 implies that it would be sought
O	Order detail description only (no result)
P	Preliminary results
R	Results entered - not verified
S	Partial results
X	Results cannot be obtained for this observation
U	Results status change to Final without retransmitting results already sent as 'preliminary.' e.g., radiology changes status from preliminary to final
W	Post original as wrong; e.g., transmitted for wrong patient

HL7-defined Table 0091 - Query priority (use in QRD-3)

Value	Description
D	Deferred
I	Immediate

HL7-defined Table 0102 - Delayed acknowledgment type (use in MSA-5)

Value	Description
D	Message received, stored for later processing
F	Acknowledgment after processing

HL7-defined Table 0103 - Processing ID (use in MSH-11)

Value	Description
D	Debugging
P	Production
T	Training

HL7-defined Table 0104 - Version ID (use in MSH-12)

Value	Description
2.0	Release 2.0 September 1988
2.0D	Demo 2.0 October 1988
2.1	Release 2.1 March 1990
2.2	Release 2.2 December 1994
2.3	Release 2.3 March 1997
2.3.1	Release 2.3.1 May 1999
2.4	Release 2.4 October 2000

HL7-defined Table 0105 - Source of comment (use in NTE-2)

Value	Description
L	Ancillary (filler) department is source of comment
P	Order-er (placer) is source of comment
O	Other system is source of comment

HL7-defined Table 0106 - Query/Response format code (use in QRD-2)

Value	Description
D	Response is in display format
R	Response is in record-oriented format
T	Response is in tabular format

HL7-defined Table 0107 - Deferred response type (use in QRD-5)

Value	Description
B	Before the date/time specified
L	Later than the date/time specified

HL7-defined Table 0108 - Query results level (use in QRD-12)

Value	Description
O	Order plus order status
R	Results without bulk text
S	Status only
T	Full results

HL7-defined Table 0119 – Order Control Codes (use in ORC-1)

Value	Description
OK	Order accepted & OK
RE	Observations to follow

HL7-defined Table 0126 - Quantity limited request (use in QRD-7)

Value	Description
CH	Characters
LI	Lines
PG	Pages
RD	Records
ZO	Locally defined

HL7-defined Table 0136 - Yes/No indicator (use in PID-24,30; PD1-12)

Value	Description
Y	Yes
N	No
“” <null>	Not obtained (when used by immunization registries as defined in PD1-12)
U	Unknown

HL7-defined Table 0155 - Accept/Application acknowledgment conditions (use in MSH-15 and 16)

Value	Description
AL	Always
NE	Never
ER	Error/Reject conditions only
SU	Successful completion only

HL7-defined Table 0162 - Route of administration [only selected values listed] (use in RXR-1)

Value	Description
ID	Intradermal
IM	Intramuscular
IN	Intranasal
IV	Intravenous
PO	Oral
OTH	Other/Miscellaneous
SC	Subcutaneous
TD	Transdermal

HL7-defined Table 0163 - Administrative site [only selected values listed] (use in RXR-2)

Value	Description 2
LT	Left Thigh
LA	Left Arm
LD	Left Deltoid
LG	Left Gluteous Medius
LVL	Left Vastus Lateralis
LLFA	Left Lower Forearm
RA	Right Arm
RT	Right Thigh
RVL	Right Vastus Lateralis
RG	Right Gluteous Medius
RD	Right Deltoid
RLFA	Right Lower Forearm

User-defined Table 0188 - Operator ID (use in EVN-5) [locally-defined – not used by ShowMeVax]

User-defined Table 0189 - Ethnic Group [These values are consistent with the OMB Notice of revised categories for collection of race and ethnicity data and with HL7's Version 2.4] (use in PID-22, NK1-28)

US ethnicity codes	HL7 Version 2.4 ethnicity codes	NIP's original temporary values (obsolete)	Description
2135-2	H	H	Hispanic or Latino
2186-5	N	NH	not Hispanic or Latino
	U		Unknown

HL7-defined Table 0190 - Address type (use in all XAD data types; including PID-11)

Value	Description
C	Current or temporary
P	Permanent
M	Mailing
B	Firm/Business
O	Office
H	Home
N	Birth (nee)
F	Country of origin
L	Legal address
BDL	Birth delivery location [use for birth facility]
BR	Residence at birth [use for residence at birth]
RH	Registry home
BA	Bad address

HL7-defined Table 0200 - Name type (use in all XCN, XPN data types; including PID-5, 6, 9)

Value	Description
A	Alias name
L	Legal name
D	Display name
M	Maiden name
C	Adopted name
B	Name at birth
P	Name of partner/spouse
U	Unspecified

HL7-defined Table 0201 - Telecommunication use code (use in all XTN data types; including PID-13,14)

Value	Description
PRN	Primary residence number
ORN	Other residence number
WPN	Work number
VHN	Vacation home number
ASN	Answering service number
EMR	Emergency number
NET	Network (email) address
BPN	Beeper number

HL7-defined Table 0202 - Telecommunication equipment type (use in all XTN data types; including PID-13,14)

Value	Description
PH	Telephone
FX	Fax
MD	Modem
CP	Cellular phone
BP	Beeper
Internet	Internet address: Use only if telecommunication use code is NET
X.400	X.400 email address: Use only if telecommunication use code is NET

User-defined Table 0203 – Identifier type [values suggested by HL7; with NIP-suggested additions] (use in all CX, XCN type codes; including PID-2, 3, 4, 18, 21 and RXA-10)

Value	Description
AM	American Express
AN	Account Number
ANON	Anonymous Identifier
BR	Birth Registry Number
DI	Diner's Club Card
DL	Driver's License Number
DN	Doctor Number
DS	Discover Card
EI	Employee Number
EN	Employer Number
FI	Facility Identifier
GI	Guarantor Internal Identifier
GN	Guarantor External Identifier
LN	License Number
LR	Local Registry ID
MS	MasterCard
MA	Medicaid Number
MC	Medicare Number
MR	Medical Record Number
NE	National Employer Identifier
NH	National Health Plan Identifier
NI	National Unique Individual Identifier
NPI	National Provider Identifier
PI	Patient Internal Identifier
PN	Person Number
PRN	Provider Number
PT	Patient External Identifier
RRI	Regional Registry ID
RR	Railroad Retirement Number
SL	State License
SR	State Registry ID
SS	Social Security Number
U	Unspecified
UPIN	Medicare/CMS's Universal Physician ID Numbers
VS	VISA
VN	Visit Number
WC	WIC Identifier
XX	Organization Identifier
VEI	Vaccinator Employee Number
OEI	Orderer Employee Number
REI	Recorder Employee Number

User-defined Table 0204 - Organizational name type [values suggested by HL7] (use in all XON data types)

Value	Description
A	Alias name
L	Legal name
D	Display name
SL	Stock exchange listing name

HL7-defined Table 0207 - Processing mode (use in MSH-11)

Value	Description
A	Archive
R	Restore from archive
I	Initial load
T	Current processing, transmitted at intervals (scheduled or on demand)
<blank>	Not present (the default, meaning current processing)

User-defined Table 0208 - Query response status [values suggested by HL7] (use in QAK-2)

Value	Description
OK	Data found, no errors (this is the default)
NF	No data found, no errors
AE	Application error
AR	Application reject

HL7-defined Table 0211 - Alternate character sets [only selected values listed] (use in MSH-18)

Value	Description
ASCII	The printable 7-bit ASCII character set (This is the default if this field is omitted)

User-defined Table 0212 - Nationality [ISO 3166 is suggested by HL7; this table shows selected values only. Note that the table reflects only 3-letter codes. Two-letter and numeric codes are also available.] The complete ISO 3166 country code set is available at: ftp://ftp.ripe.net/iso3166-countrycodes.txt. Note: CDC has permission to disseminate certain ISO 3166 codes as a Federal agency that does not require applications to interchange data internationally and that are not involved in national defense programs or with the mission of the U.S. Department of State. (Use in PID-28; also use for country code in all XAD data types)

Value	Description
CAN	Canada
MEX	Mexico
USA	United States
UMI	United States Minor Outlying Islands

User-defined Table 0215 - Publicity code [*values suggested by NIP*] (use in PD1-11)

Value	Description
01	No reminder/recall
02	Reminder/recall - any method
03	Reminder/recall - no calls
04	Reminder only - any method
05	Reminder only - no calls
06	Recall only - any method
07	Recall only - no calls
08	Reminder/recall - to provider
09	Reminder to provider
10	Only reminder to provider, no recall
11	Recall to provider
12	Only recall to provider, no reminder

User-defined Table 0220 - Living arrangement [values suggested by HL7; with NIP-suggested additions] (use in NK1-21)

Value	Description
A	Alone
F	Family
I	Institution
R	Relative
U	Unknown
S	Spouse only
W	With patient
N	Not with patient

User-defined Table 0222 - Contact reason [*values suggested by NIP*] (use in NK1-29)

Value	Description
RR	NK1 is reminder/recall contact for immunization registry
PC	NK1 is responsible for patient care

HL7-defined Table 0227 - Manufacturers of vaccines (code = MVX) (use in RXA-17). The table below represents the July 2006 version of the MVX code set. The CDC's National Center for Immunization and Respiratory Diseases (NCIRD) maintains the HL7 external code set MVX. The implementation of the HL7 standard for immunization data exchange is described in Chapter 4 of the HL7 standard. The codes in HL7 Version 2.3 table 0227 represent the initial content of the external MVX code set. This document represents the most up-to-date version of the MVX code set. See Website for further updates:

http://www.cdc.gov/nip/registry/st_terr/tech/stds/hl7-cvx.htm

NOTE: The MVX table reflects name changes and changes in corporate status. Where there have been company mergers/acquisitions, the affected old codes have been labeled "inactive. Where mergers/acquisitions have left the original company(ies) substantially intact, the original code remains so that Immunization Information Systems (IIS) and other users may not need to modify historical immunization records or internal tables for manufacturer names.

Code	Vaccine Manufacturer/Distributor
AB	Abbott Laboratories (includes Ross Products Division)
AD	Adams Laboratories, Inc.
ALP	Alpha Therapeutic Corporation
AR	Armour [Inactive – use AVB]
AVB	Aventis Behring L.L.C. (formerly Centeon L.L.C.; includes Armour Pharmaceutical Company) [Inactive – use ZLB]
AVI	Aviron
BA	Baxter Healthcare Corporation [Inactive – use BAH]
BAH	Baxter Healthcare Corporation (includes Hyland Immuno, Immuno International AG, and North American Vaccine, Inc.)
BAY	Bayer Corporation (includes Miles, Inc., and Cutter Laboratories)
BP	Berna Products [Inactive – use BPC]
BPC	Berna Products Corporation (includes Swiss Serum and Vaccine Institute Berne)
MIP	Bioport Corporation (formerly Michigan Biologic Products Institute)
CNJ	Cangene Corporation
CMP	Celltech Medeva Pharmaceuticals [Inactive – use NOV]
CEN	Centeon L.L.C. [Inactive – use AVB]
CHI	Chiron Corporation [Inactive – use NOV] Includes PowderJect Pharmaceuticals, Celltech Medeva Vaccines and Evans Medical Limited
CON	Connaught [Inactive – use PMC]
DVC	DynPort Vaccine Company, LLC
EVN	Evans Medical Limited [Inactive – use NOV]
GEO	GeoVax Labs, Inc.
SKB	GlaxoSmithKline (formerly SmithKline Beecham; includes SmithKline Beecham and Glaxo Wellcome)
GRE	Greer Laboratories, Inc.
IAG	Immuno International AG [Inactive – use BAH]
IUS	Immuno-U.S., Inc.
KGC	Korea Green Cross Corporation
LED	Lederle [Inactive – use WAL]
MBL	Massachusetts Biologic Laboratories (formerly Massachusetts Public Health Biologic Laboratories)
MA	Massachusetts Public Health Biologic Laboratories [Inactive – use MBL]
MED	MedImmune, Inc.
MSD	Merck & Co., Inc.
IM	Merieux [Inactive – use PMC]

Code	Vaccine Manufacturer/Distributor
MIL	Miles [Inactive – use BAY]
NAB	NABI (formerly North American Biologicals, Inc.)
NYB	New York Blood Center
NAV	North American Vaccine, Inc. [Inactive – use BAH]
NOV	Novartis Pharmaceutical Corporation (includes Chiron, PowderJect Pharmaceuticals, Celltech Medeva Vaccines and Evans Limited, Ciba-Geigy Limited and Sandoz Limited)
NVX	Novavax, Inc.
OTC	Organon Teknika Coporation
ORT	Ortho-clinical Diagnostics (formerly Ortho Diagnostic Systems, Inc.)
PD	Parkedale Pharmaceuticals (formerly Parke-Davis)
PWJ	PowderJect Pharmaceuticals (includes Celltech Medeva Vaccines and Evans Medical Limited) [Inactive – use NOV]
PRX	Praxis Biologics [Inactive – use WAL]
JPN	The Research Foundation for Microbial Diseases of Osaka University (BIKEN)
PMC	sanofi pasteur (formerly Aventis Pasteur, Pasteur Merieux Connaught; includes Connaught Laboratories and Pasteur Merieux)
SCL	Sclavo, Inc.
SOL	Solvay Pharmaceuticals
SI	Swiss Serum and Vaccine Inst. [Inactive – use BPC]
TAL	Talecris Biotherapeutics (includes Bayer Biologicals)
USA	United States Army Medical Research and Material Command
VXG	VaxGen
WA	Wyeth-Ayerst [Inactive – use WAL]
WAL	Wyeth-Ayerst (includes Wyeth-Lederle Vaccines and Pediatrics, Wyeth Laboratories, Lederle Laboratories, and Praxis Biologics)
ZLB	ZLB Behring (includes Aventis Behring and Armour Pharmaceutical Company)
OTH	Other manufacturer
UNK	Unknown manufacturer

User-defined Table 0288 - Census tract (use in all XAD; including PID-11). For information about identifying census tracts, see <www.census.gov/geo/www/tractez.html>.

User-defined Table 0289 - County/parish (use in all XAD; including PID-11) A complete list of FIPS 6-4 county codes is available at <www.itl.nist.gov/div897/pubs/fip6-4.htm>. According to the FIPS guidance, the 2-letter state code (available at <www.itl.nist.gov/div897/pubs/fip52.htm>) plus the numeric county code should be used (e.g., MO001 represents Adair County, Missouri and MO510 represents St Louis City, Missouri). ShowMeVax also supports simply a 3-digit FIPS code with the State being indicated in component 4 of the XAD data type. Example: 051 represents Cole County, Missouri.

HL7-defined Table 0292 - Codes for Vaccines administered (code=CVX) (use in RXA-5) NOTE: parenteral unless otherwise specified. The table below represents the June 2006 version of the CVX code set. New codes are added as needed; therefore, see the most current version of this code set at the website Web site: http://www.cdc.gov/nip/registry/st_terr/tech/stds/hl7-cvx.htm. The CDC's National Center for Immunization and Respiratory Diseases (NCIRD) maintains the HL7 external code set CVX. The implementation of the HL7 standard for immunization data exchange is described in Chapter 4of the HL7 standard. The codes in HL7 Version 2.3 table 0292, represented the initial content of the external CVX code set. Since vaccines have to be added to this table more quickly than new versions of HL7 are released, this document represents the most up-to-date version of the CVX code set. Items have been added. Others have been added for planning purposes, pending FDA approval.

CVX – Vaccines Administered

Code	Short Description	Full Vaccine Name
54	adenovirus, type 4	adenovirus vaccine, type 4, live, oral
55	adenovirus, type 7	adenovirus vaccine, type 7, live, oral
82	adenovirus, NOS1	adenovirus vaccine, NOS
24	anthrax	anthrax vaccine
19	BCG	Bacillus Calmette-Guerin vaccine
27	botulinum antitoxin	botulinum antitoxin
26	cholera	cholera vaccine
29	CMVIG	cytomegalovirus immune globulin, intravenous
56	dengue fever	dengue fever vaccine
12	diphtheria antitoxin	diphtheria antitoxin
28	DT (pediatric)	diphtheria and tetanus toxoids, adsorbed for pediatric use
20	DTaP	diphtheria, tetanus toxoids and acellular pertussis vaccine
106	DTaP, 5 pertussis antigens6	diphtheria, tetanus toxoids and acellular pertussis vaccine, 5 pertussis antigens
107	DTaP, NOS	diphtheria, tetanus toxoids and acellular pertussis vaccine, NOS
110	DTaP-Hep B-IPV	DTaP-hepatitis B and poliovirus vaccine
50	DTaP-Hib	DTaP-Haemophilus influenzae type b conjugate vaccine
120	DTaP-Hib-IPV	diphtheria, tetanus toxoids and acellular pertussis vaccine, Haemophilus influenzae type b conjugate, and poliovirus vaccine (DTaP-Hib-IPV)
01	DTP	diphtheria, tetanus toxoids and pertussis vaccine
22	DTP-Hib	DTP-Haemophilus influenzae type b conjugate vaccine
102	DTP-Hib-Hep B	DTP-Haemophilus influenzae type b conjugate and hepatitis b vaccine
57	hantavirus	hantavirus vaccine
52	Hep A, adult	hepatitis A vaccine, adult dosage
83	Hep A, ped/adol, 2 dose	hepatitis A vaccine, pediatric/adolescent dosage, 2 dose schedule
84	Hep A, ped/adol, 3 dose	hepatitis A vaccine, pediatric/adolescent dosage, 3 dose schedule
31	Hep A, pediatric, NOS	hepatitis A vaccine, pediatric dosage, NOS
85	Hep A, NOS	hepatitis A vaccine, NOS
104	Hep A-Hep B	hepatitis A and hepatitis B vaccine
30	HBIG	hepatitis B immune globulin

Code	Short Description	Full Vaccine Name
08	Hep B, adolescent or pediatric	hepatitis B vaccine, pediatric or pediatric/adolescent dosage
42	Hep B, adolescent/high risk infant2	hepatitis B, adolescent/high risk infant dosage
43	Hep B, adult4	hepatitis B vaccine, adult dosage
44	Hep B, dialysis	hepatitis B vaccine, dialysis patient dosage
45	Hep B, NOS	hepatitis B vaccine, NOS
58	Hep C	hepatitis C vaccine
59	Hep E	hepatitis E vaccine
60	herpes simplex 2	herpes simplex virus, type 2 vaccine
46	Hib (PRP-D)	Haemophilus influenzae type b vaccine, PRP-D conjugate
47	Hib (HbOC)	Haemophilus influenzae type b vaccine, HbOC conjugate
48	Hib (PRP-T)	Haemophilus influenzae type b vaccine, PRP-T conjugate
49	Hib (PRP-OMP)	Haemophilus influenzae type b vaccine, PRP-OMP conjugate
17	Hib, NOS	Haemophilus influenzae type b vaccine, conjugate NOS
51	Hib-Hep B	Haemophilus influenzae type b conjugate and Hepatitis B vaccine
61	HIV	human immunodeficiency virus vaccine
118	HPV, bivalent	human papilloma virus vaccine, bivalent
62	HPV, quadrivalent	human papilloma virus vaccine, quadrivalent
86	IG	immune globulin, intramuscular
87	IGIV	immune globulin, intravenous
14	IG, NOS	immune globulin, NOS
111	influenza, live, intranasal	influenza virus vaccine, live, attenuated, for intranasal use
15	influenza, split (incl. purified surface antigen)	influenza virus vaccine, split virus (incl. purified surface antigen)
16	influenza, whole	influenza virus vaccine, whole virus
88	influenza, NOS	influenza virus vaccine, NOS
10	IPV	poliovirus vaccine, inactivated
02	OPV	poliovirus vaccine, live, oral
89	polio, NOS	poliovirus vaccine, NOS
39	Japanese encephalitis	Japanese encephalitis vaccine
63	Junin virus	Junin virus vaccine
64	leishmaniasis	leishmaniasis vaccine
65	Leprosy	leprosy vaccine
66	Lyme disease	Lyme disease vaccine
03	MMR	measles, mumps and rubella virus vaccine
04	M/R	measles and rubella virus vaccine
94	MMRV	measles, mumps, rubella, and varicella virus vaccine
67	malaria	malaria vaccine
05	measles	measles virus vaccine
68	melanoma	melanoma vaccine
32	meningococcal	meningococcal polysaccharide vaccine (MPSV4)
103	meningococcal C conjugate	meningococcal C conjugate vaccine

Code	Short Description	Full Vaccine Name
114	meningococcal A,C,Y,W-135 diphtheria conjugate	meningococcal polysaccharide (groups A, C, Y and W-135) diphtheria toxoid conjugate vaccine (MCV4)
108	meningococcal, NOS	meningococcal vaccine, NOS
07	mumps	mumps virus vaccine
69	parainfluenza-3	parainfluenza-3 virus vaccine
11	pertussis	pertussis vaccine
23	plague	plague vaccine
33	pneumococcal	pneumococcal polysaccharide vaccine
100	pneumococcal conjugate	pneumococcal conjugate vaccine, polyvalent
109	pneumococcal, NOS	pneumococcal vaccine, NOS
70	Q fever	Q fever vaccine
18	rabies, intramuscular injection	rabies vaccine, for intramuscular injection
40	rabies, intradermal injection	rabies vaccine, for intradermal injection
90	rabies, NOS	rabies vaccine, NOS
72	rheumatic fever	rheumatic fever vaccine
73	Rift Valley fever	Rift Valley fever vaccine
34	RIG	rabies immune globulin
119	rotavirus, monovalent	rotavirus, live, monovalent vaccine
122	rotavirus, NOS1	rotavirus vaccine, NOS
116	rotavirus, pentavalent	rotavirus, live, pentavalent vaccine
74	rotavirus, tetravalent	rotavirus, live, tetravalent vaccine
71	RSV-IGIV	respiratory syncytial virus immune globulin, intravenous
93	RSV-MAb	respiratory syncytial virus monoclonal antibody (palivizumab), intramuscular
06	rubella	rubella virus vaccine
38	rubella/mumps	rubella and mumps virus vaccine
76	Staphylococcus bacterio lysate	Staphylococcus bacteriophage lysate
113	Td (adult)	tetanus and diphtheria toxoids, adsorbed, preservative free, for adult use
09	Td (adult)	tetanus and diphtheria toxoids, adsorbed for adult use
115	Tdap	tetanus toxoid, reduced diphtheria toxoid, and acellular pertussis vaccine, adsorbed
35	tetanus toxoid	tetanus toxoid, adsorbed
112	tetanus toxoid, NOS	tetanus toxoid, NOS
77	tick-borne encephalitis	tick-borne encephalitis vaccine
13	TIG	tetanus immune globulin
95	TST-OT tine test	tuberculin skin test, old tuberculin, multipuncture device
96	TST-PPD intradermal	tuberculin skin test, purified protein derivative, intradermal
97	TST-PPD tine test	tuberculin skin test, purified protein derivative, multipuncture device
98	TST, NOS	tuberculin skin test, NOS
78	tularemia vaccine	tularemia vaccine
91	typhoid, NOS	typhoid vaccine, NOS
25	typhoid, oral	typhoid vaccine, live, oral
41	typhoid, parenteral	typhoid vaccine, parenteral, other than acetone-killed, dried
53	typhoid, parenteral, AKD (U.S. military)	typhoid vaccine, parenteral, acetone-killed, dried (U.S. military)

Code	Short Description	Full Vaccine Name
101	typhoid, ViCPs	typhoid Vi capsular polysaccharide vaccine
75	vaccinia (smallpox)	vaccinia (smallpox) vaccine
105	vaccinia (smallpox) diluted	vaccinia (smallpox) vaccine, diluted
79	vaccinia immune globulin	vaccinia immune globulin
21	varicella	varicella virus vaccine
81	VEE, inactivated	Venezuelan equine encephalitis, inactivated
80	VEE, live	Venezuelan equine encephalitis, live, attenuated
92	VEE, NOS	Venezuelan equine encephalitis vaccine, NOS
36	VZIG	varicella zoster immune globulin
117	VZIG (IND)	varicella zoster immune globulin (Investigational New Drug)
37	yellow fever	yellow fever vaccine
121	zoster	zoster vaccine, live
998	no vaccine administered5	no vaccine administered
999	unknown	unknown vaccine or immune globulin
99	RESERVED – do not use3	RESERVED – do not use

Usage Notes:

1. NOS=not otherwise specified; avoid using NOS codes except to record historical records that lack the indicated specificity.
2. As of August 27, 1998, Merck ceased distribution of their adolescent/high risk infant hepatitis B vaccine dosage. Code 42 should only be used to record historical records. For current administration of hepatitis B vaccine, pediatric/adolescent dosage, use code 08.
3. Code 99 will not be used in this table to avoid confusion with code 999.
4. As of September 1999, a 2-dose hepatitis B schedule for adolescents (11-15 year olds) was FDA approved for Merck's Recombivax HB® adult formulation. Use code 43 for both the 2-dose and the 3-dose schedules.
5. Code 998 was added for use in VXR and VXU HL7 messages where the OBX segment is nested with the RXA segment, but the message does not contain information about a vaccine administration. An example of this use is to report the vaccines due next for a patient when no vaccine administration is being reported.
6. As of May 2002, the FDA approved Aventis Pasteur's DTaP Daptacel for use in the U.S. Aventis Pasteur also manufactures the DTaP vaccine Tripedia. Daptacel contains 5 pertussis antigens, while Tripedia contains 2 pertussis antigens. To distinguish between the two Aventis Pasteur DTaP vaccines, dose 106 was added to represent Daptacel. Use code 106 for Daptacel and code 20 for Tripedia and other DTaP vaccines.

User-defined Table 0296 - Language [ISO 639 suggested by HL7; selected 2-letter values listed from ISO 639:1988; The full set of ISO 639 Language Codes is available for purchase from <www.ansi.org>. Where ISO 2-letter codes are not available, 3-letter codes are given from the Ethnologue, available at <www.sil.org/ethnologue/>.] (Use in PID-15).

Value	Description
ASE	American Sign Language
Ar	Arabic
Hy	Armenian
Bn	Bengali
Km	Cambodian (Khmer)
CJD	Chamorro
YUH	Chinese, Cantonese
Zh	Chinese, Mandarin
Hr	Croatian
Cs	Czech
Nl	Dutch
En	English
Fa	Farsi (Persian)
Fr	French
De	German
el	Greek
hi	Hindi
BLU	Hmong
hu	Hungarian
ILO	Ilocano
id	Indonesian
it	Italian
ja	Japanese
ko	Korean
lo	Laotian
pl	Polish
pt	Portuguese
ro	Romanian
ru	Russian
sm	Samoan
sr	Serbian
sk	Slovak
so	Somali
es	Spanish
tl	Tagalog
th	Thai
to	Tongan
uk	Ukranian
ur	Urdu
vi	Vietnamese
yi	Yiddish
OTH	Other (must add text component of the CE field with description)

User-defined Table 0297 - CN ID source (use in all XCN data types) [locally-defined]

User-defined Table 0300 - Namespace ID (use in all EI, HD data types) [locally-defined]

HL7-defined Table 0301 - Universal ID type (use in all HD data types)

Value	Description
DNS	An Internet dotted name -- either in ASCII or as integers.
GUID	Same as UUID.
HCD	The CEN Healthcare Coding Scheme Designator. (Identifiers used in DICOM follow this assignment scheme.)
HL7	Reserved for future HL7 registration schemes.
ISO	An International Standards Organization Object Identifier.
L, M, N	These are reserved for locally defined coding schemes.
Random	Usually a base64 encoded string of random bits. The uniqueness depends on the length of the bits. Mail systems often generate ASCII string "unique names," from a combination of random bits and system names. Obviously, such identifiers will not be constrained to the base64 character set.
UUID	The DCE Universal Unique Identifier.
x400	An X.400 MHS format identifier.
x500	An X.500 directory name.

HL7-defined Table 0322 - Completion status (use in RXA-20)

Value	Description
CP	Complete
RE	Refused
NA	Not Administered
PA	Partially Administered

HL7-defined Table 0323 - Action code (use in RXA-21)

Value	Description
A	Add
D	Delete
U	Update

HL7-defined Table 0354 – Message structure [only selected values listed] (use in MSH-9, third component)

Value	Events
ADT A01	A01, A04, A05, A08, A13, A14, A28, A31
ADT A02	A02, A21, A22, A23, A25, A26, A27, A29, A32, A33
ADT A30	A30, A34, A35, A36, A46, A47, A48, A49
VXQ V01	V01
VXR V03	V03
VXU V04	V04
VXX V02	V02
ORU R01	R01

HL7-defined Table 0356 - Alternate character set handling scheme (use in MSH-20)

Value	Description
ISO 2022-1994	This standard is titled "Information Technology - Character Code Structure and Extension Technique." This standard specifies an escape sequence from basic one byte character set to specified other character set, and vice versa. The escape sequence explicitly specifies what alternate character set is to be evoked...This value is allowed only for HL7 v. 2.3.1.
2.3	The character set switching mode specified in HL7 2.3, sections 2.8.28.6.1 and 2.9.2. Note that the escape sequences used in this mode are "HL7 escape sequences" as defined in HL7 2.3, sec. 2.9, and do not use the ASCII "esc" character, as defined in ISO 2022-1994.
<null>	This is the default, indicating that there is no character set switching occurring in this message.

HL7-defined Table 0357 – Message error status codes (use in ERR-1)

Status code	Status text	Description/Comment
Success		
0	Message accepted	Success. Optional, as the AA conveys this. Used for systems that must always return a status code.
Error status codes		
100	Segment sequence error	The message segments were not in the proper order or required segments are missing.
101	Required field missing	A required field is missing from the segment.
102	Data type error	The field contained data of the wrong data type, e.g., an NM field contained letters of the alphabet.
103	Table value not found	A field of data type ID or IS was compared against the corresponding table, and no match was found.
Rejection status codes		
200	Unsupported message type	The Message type is not supported.
201	Unsupported event code	The Event Code is not supported.
202	Unsupported processing ID	The Processing ID is not supported.
203	Unsupported version ID	The Version ID is not supported.
204	Unknown key identifier	The ID of the patient, order, etc. was not found. Used for transactions other than additions, e.g., transfer of a non-existent patient.
205	Duplicate key identifier	The ID of the patient, order, etc. already exists. Used in response to addition transactions (Admit, New Order, etc.).
206	Application record locked	The transaction could not be performed at the application storage level, e.g., database locked.
207	Application internal error	A catchall for internal errors not explicitly covered by other codes.

User-defined Table 0360 - Degree [selected values suggested by HL7; *with NIP-suggested additions*— these will be included in HL7 Version 2.5] (use in all XPN data types, including PID-5, 6, 9)

Value	Description
PN	Advanced Practice Nurse
AA	Associate of Arts
AS	Associate of Science
BA	Bachelor of Arts
BN	Bachelor of Nursing
BS	Bachelor of Science
BSN	Bachelor of Science in Nursing
CER	Certificate
CANP	Certified Adult Nurse Practitioner
CMA	Certified Medical Assistant
CNP	Certified Nurse Practitioner
CNM	Certified Nurse Midwife
CNA	Certified Nurse's Assistant
CRN	Certified Registered Nurse
CNS	Certified Nurse Specialist
CPNP	Certified Pediatric Nurse Practitioner
DIP	Diploma
PHD	Doctor of Philosophy
MD	Doctor of Medicine
DO	Doctor of Osteopathy
EMT	Emergency Medical Technician
EMT-P	Emergency Medical Technician – Paramedic
FPNP	Family Practice Nurse Practitioner
HS	High School Graduate
JD	Juris Doctor
LPN	Licensed Practical Nurse
MA	Master of Arts
MBA	Master of Business Administration
MPH	Master of Public Health
MS	Master of Science
MSN	Master of Science – Nursing
MDA	Medical Assistant
MT	Medical Technician
NG	Non-Graduate
NP	Nurse Practitioner
PharmD	Doctor of Pharmacy
PA	Physician Assistant
PHN	Public Health Nurse
RMA	Registered Medical Assistant
RN	Registered Nurse
RPH	Registered Pharmacist
SEC	Secretarial Certificate
TS	Trade School Graduate

User-defined Table 0396 – Coding system [only selected values listed] [From HL7 Standard, Version 2.4] (Use in CE data types to denote the coding system used for coded values)

Value	Description
99zzz or L	Local general code (where z is an alphanumeric character)
ART	WHO Adverse Reaction Terms
C4	CPT-4
C5	CPT-5
CDCA	CDC Analyte Codes
CDCM	CDC Methods/Instruments Codes
CDS	CDC Surveillance
CPTM	CPT Modifier Code
CST	COSTART
CVX	CDC Vaccine Codes
E	EUCLIDES
E5	Euclides quantity codes
E6	Euclides Lab method codes
E7	Euclides Lab equipment codes
ENZC	Enzyme Codes
HB	HIBCC
HCPCS	HCFA Common Procedure Coding System
HHC	Home Health Care
HL7nnnn	HL7 Defined Codes where nnnn is the HL7 table number
HPC	HCFA Procedure Codes (HCPCS)
I10	ICD-10
I10P	ICD-10 Procedure Codes
I9	ICD9
I9C	ICD-9CM
ISOnnnn	ISO Defined Codes where nnnn is the ISO table number
LB	Local billing code
LN	Logical Observation Identifier Names and Codes (LOINC®)
MCD	Medicaid
MCR	Medicare
MEDR	Medical Dictionary for Drug Regulatory Affairs (MEDDRA)
MVX	CDC Vaccine Manufacturer Codes
NDC	National drug codes
NPI	National Provider Identifier
SNM	Systemized Nomenclature of Medicine (SNOMED®)
SNM3	SNOMED International
SNT	SNOMED topology codes (anatomic sites)
UML	Unified Medical Language
UPC	Universal Product Code
UPIN	UPIN
W1	WHO record # drug codes (6 digit)
W2	WHO record # drug codes (8 digit)
W4	WHO record # code with ASTM extension
WC	WHO ATC

User-defined Table 0441 - Immunization registry status (Similar to previous Table NIP006 – Patient registry status) (use in PD1-16) [HL7 assigned table number 0441 in Version 2.4]

Value	Description
A	Active
I	Inactive
L	Inactive-Lost to follow-up (cannot contact)
M	Inactive-Moved or gone elsewhere (transferred)
P	Inactive-Permanently inactive (do not re-activate or add new entries to this record)
O	Other
U	Unknown

HL7-defined Table 4000 – Name /address representation (use in all XPN, XAD data types) (PID-5, 6, 9, 11)

Value	Description
I	Ideographic (e.g., Kanji)
A	Alphabetic (e.g., Default or some single-byte)
P	Phonetic (e.g., ASCII, Katakana, Hirigana, etc.)

NIP-defined NIP001 - Immunization information source (use in RXA-9)

Value	Description
00	*New immunization record*
01	*Historical information - source unspecified*
02	*Historical information - from other provider*
03	*Historical information - from parent's written record*
04	*Historical information - from parent's recall*
05	*Historical information - from other registry*
06	*Historical information - from birth certificate*
07	*Historical information - from school record*
08	*Historical information - from public agency*

NIP-defined NIP002 - Substance refusal reason (use in RXA-18)

Value	Description
00	*Parental decision*
01	*Religious exemption*
02	*Other (must add text component of the CE field with description)*
03	*Patient decision*

NIP-defined NIP003 - Observation identifiers (use in OBX-3)

LOINC® Code	Description	Corresponding data type (indicate in OBX-2)	Corresponding observation value *EXAMPLE* OR code table to use (value in OBX-5)
Dose Number for Combination Vaccines Use in OBX-3 to indicate that OBX-5 value will be the dose number for a component of a combination vaccine. Used when dose numbers are different for the component antigens. **The use of these codes is discouraged.** Note that there is no code for "Polio dose count in combination vaccine". It is preferred that LOINC® codes 38890-0&30973-2, which do not have that limitation, be used instead; see the section of this table for "Vaccine Component (of a combination vaccine)".			
30936-9	DTaP/DTP dose count in combination vaccine	(NM)	***4***
30937-7	Hepatitis B dose count in combination vaccine	(NM)	***3***
30938-5	Haemophilus influenzae B dose count in combination vaccine	(NM)	***2***
30939-3	Measles dose count in combination vaccine	(NM)	***2***
30940-1	MMR dose count in combination vaccine	(NM)	***2***
30941-9	Mumps dose count in combination vaccine	(NM)	***2***
30942-7	Rubella dose count in combination vaccine	(NM)	***2***
30943-5	Varicella dose count in combination vaccine	(NM)	***2***
Contraindications, Precautions, and Immunities			
30946-8	Vaccination contraindication/precaution effective date	(DT)	***19970522***
30944-3	Vaccination temporary contraindication/precaution expiration date	(DT)	***19990523***
30945-0	Vaccination contraindication/precaution	(CE)	NIP-defined Table NIP004
31044-1	Reaction	(CE)	Locally defined
Vaccine Information Statement (VIS) Dates			
29768-9	Date Vaccine Information Statement Published	(TS)	***19900605***
29769-7	Date Vaccine Information Statement Presented	(TS)	***199307311615***
Vaccine Component (of a combination vaccine)			
38890-0	Component Vaccine Type [38890-0 is the top level of this item description. Sub-components of this field are represented by a combination of this LOINC® code and a subcomponent LOINC® code, joined by an "&."]	(CE)	HL70292 (CVX codes – use the codes described as "NOS" as needed.)
29768-9	38890-0&29768-9 – Date Vaccine Information Statement Published	(TS)	***19900605***
30973-2	38890-0&30973-2 -- Dose number in series	(NM)	***2***
30959-1	38890-0&30959-1 – Lot [This can be used for a combination vaccine that comes in a package containing separate vials that must be mixed prior to administration.	(ST)	***Y706QB110***

LOINC® Code	Description	Corresponding data type (indicate in OBX-2)	Corresponding observation value *EXAMPLE* OR code table to use (value in OBX-5)
	The package has a lot # which should appear in the RXA segment. The component vial within the package may have its own lot # which is different.]		
	Vaccines Due Next		
30979-9	Vaccines due next [30979-9 is the top level of this item description. Sub-components of this field are represented by a combination of this LOINC® code and a subcomponent LOINC® code, joined by an "&."]	(CE)	HL70292 (CVX)
30980-7	30979-9&30980-7 – Date vaccine due	(TS)	***19980526***
30973-2	30979-9&30973-2 -- Vaccine due next dose number	(NM)	***1***
30981-5	30979-9&30981-5 – Earliest date to give	(TS)	***19980522***
30982-3	30979-9&30982-3 – Reason applied by forecast logic to project this vaccine	(CE) or (ST)	Codes for forecast logic reason locally defined.
Vaccine Adverse Event Reporting System (VAERS) - For additional information about VAERS, including a copy of the VAERS Form, see <www.cdc.gov/nip/vaers.htm> or <www.fda.gov/cber/vaers/vaers.htm>. (*In this document, also see 7.2.1 (pages 13-17) Unsolicited Transmission of an Observation (ORU), Example VAERS ORU Message)*			
30947-6	Date form completed (VAERS Form Item #6)	(TS)	20010316
30948-4	Vaccination adverse event(s)(symptoms, signs, time course) and treatment, if any (VAERS Form Item #7)	(FT)	***Fever of 106F, with vomiting, seizures, etc.***
30949-2	Vaccination adverse event outcome (VAERS Form Item #8)	(CE)	NIP-defined Table NIP005
30950-0	Number of days hospitalized due to vaccination adverse event (VAERS Form Item #8)	(NM)	02
30951-8	Patient recovered (VAERS Form Item #9)	(CE)	HL7 table HL70136
30952-6	Date and time of vaccination (VAERS Form Item #10)	(TS)	***20010216***
30953-4	Vaccination adverse event onset date and time (VAERS Form Item #11)	(TS)	***20011021080900***
30954-2	Relevant diagnostic tests/laboratory data (VAERS Form Item #12)	(FT)	***Electrolytes, CBC, Blood Culture***

LOINC® Code	Description	Corresponding data type (indicate in OBX-2)	Corresponding observation value *EXAMPLE* OR code table to use (value in OBX-5)
30955-9	All vaccines given on date listed in no. 10 (VAERS Form Item #13) [30955-9 represents the VAERS form item description. Sub-components of this field are represented by a combination of this LOINC® code and a subcomponent LOINC® code, joined by an "&."]		*see 7.2.1 (pages 13-17) Unsolicited Transmission of an Observation (ORU), See Example VAERS ORU Message, and items below*
30956-7	a) 30955-9&30956-7 Vaccine type	(CE)	HL7 table HL70292 (CVX)
30957-5	b) 30955-9&30957-5 Vaccine manufacturer	(CE)	HL7 table HL70227 (MVX)
30959-1	c) 30955-9&30959-1 Lot	(ST)	***A119PZY06022000***
30958-3	d) 30955-9&30958-3 Vaccine route	(CE)	HL7 table HL70162
31034-2	e) 30955-9&31034-2 Vaccine site		HL7 table HL70163
30960-9	f) 30955-9&30960-9 Number of previous doses	(CE)	***01***
30961-7	Any other vaccinations within 4 weeks prior to the date listed in no.10 [30961-7 represents the VAERS form item description. Sub-components of this field are represented by a combination of this LOINC® code and a subcomponent LOINC® code, joined by an "&."]		See below
30956-7	a) 30961-7&30956-7 Vaccine type	(CE)	HL7 table HL70292 (CVX)
30957-5	b) 30961-7&30957-5 Vaccine manufacturer	(CE)	HL7 table HL70227(MVX)
30959-1	c) 30961-7&30959-1 Lot number	(ST)	***KJM903XS8902Z***
30958-3	d) 30961-7&30958-3 Vaccine route	(CE)	HL7 table HL70162
31034-2	e) 30961-7&31034-2 Vaccine site	(CE)	HL7 table HL70163
30960-9	f) 30961-7&30960-9 Number of previous doses	(NM)	***01***
31035-9	g) 30961-7&31035-9 Date given	(TS)	***20010216***
30962-5	Vaccinated at (VAERS Form Item #15)	(CE)	NIP table NIP007
30963-3	Vaccine purchased with (VAERS Form Item #16)	(CE)	NIP table NIP008
30964-1	Other medications (patient was receiving at time of vaccination) (VAERS Form Item #17)	(FT)	***None***
30965-8	Illness present at time of vaccination (VAERS Form Item #18)	(FT)	***None***
30966-6	Pre-existing physician-diagnosed allergies, birth defects, medical conditions (VAERS Form Item #19)	(FT)	Past conditions convulsions
30967-4	Adverse event reported previously (VAERS Form Item #20)	(CE)	NIP table NIP009
30968-2	Adverse event following prior vaccination in patient (VAERS Form Item #21)		see below

LOINC® Code	Description	Corresponding data type (indicate in OBX-2)	Corresponding observation value *EXAMPLE* OR code table to use (value in OBX-5)
	[30968-2 represents the VAERS form item description. Sub-components of this field are represented by a combination of this LOINC® code and a subcomponent LOINC® code, joined by an "&."]		
30971-6	a) 30968-2&30971-6 -- Adverse event	(FT)	***None***
30972-4	b) 30968-2&30972-4 -- Onset age	(NM)	***05***
30956-7	c) 30968-2&30956-7 -- Vaccine type	(CE)	HL7 table HL70292 (CVX)
30973-2	d) 30968-2&30973-2 -- Dose number in series	(NM)	***02***
35286-4	Adverse event following prior vaccination in sibling #1 (VAERS Form Item #21) [35286-4 represents the VAERS form item description. Sub-components of this field are represented by a combination of this LOINC® code and a subcomponent LOINC® code, joined by an "&."]		See below
30971-6	a) 35286-4&30971-6 -- Adverse event	(FT)	***Vomiting, fever, otitis media***
30972-4	b) 35286-4&30972-4 -- Onset age	(NM)	***04 (mo)***
30956-7	c) 35286-4&30956-7 -- Vaccine type	(CE)	HL7 table HL70292 (CVX))
30973-2	d) 35286-4&30973-2 -- Dose number in series	(NM)	***02***
35286-4	Adverse event following prior vaccination in sibling #2 (VAERS Form Item #21) [35286-4 represents the VAERS form item description. Sub-components of this field are represented by a combination of this LOINC® code and a subcomponent LOINC® code, joined by an "&."]		***See below (Note: No Adverse Event took place in this instance for sibling #2: therefore the None, and N/A/ notes below apply.)***
30971-6	a) 35286-4&30971-6 -- Adverse event	(FT)	***None***
30972-4	b) 35286-4&30972-4 -- Onset age	(NM)	***N/A (no Adverse Event)***
30956-7	c) 35286-4&30956-7 -- Vaccine type	(CE)	***N/A (no Adverse Event) (HL7 table HL70292 (CVX))***
30973-2	d) 35286-4&30973-2 -- Dose number in series	(NM)	***N/A (no Adverse Event)***
8339-4	Birth weight at birth(VAERS Form Item #22)	(NM)	***82 (oz) (HL7 Figure 7-11, ANSI+unit codes)***
30974-0	Number of brothers and sisters (VAERS Form Item #23)	(NM)	***2***
30975-7	Manufacturer/immunization project report No. (VAERS Form Item #24)	(ST)	***12345678 (only for reports submitted by mfr or immunization project-applies to this***

LOINC® Code	Description	Corresponding data type (indicate in OBX-2)	Corresponding observation value *EXAMPLE* OR code table to use (value in OBX-5)
			item and also three items below)
30976-5	Date received by manufacturer/immunization project (VAERS Form Item #25)	(TS)	***20010320***
30977-3	15 day report (VAERS Form Item #26)		***N (No) (HL7 table HL70136)***
30978-1	Report type (VAERS Form Item #27)		***I (Initial) (NIP table NIP010)***

NIP-defined NIP004 - Contraindications, Precautions, and Immunities [Descriptions and explanations are summarized from Appendix A of the January 2002 Epidemiology and Prevention of Vaccine-Preventable Diseases. For more detail, see the appropriate ACIP recommendations at www.cdc.gov/nip/publications/ACIP-list.htm. This list also includes suggested codes by immunization registry representatives.] (Use in OBX-5 when OBX-3 is valued as LOINC® code 30945-0, Vaccination contraindication/precaution)

Value	Description	Explanation
01	recipient condition - unspecified	
02	household condition - unspecified	
03	allergy to baker's yeast (anaphylactic)	contraindicates Hep B
04	allergy to egg ingestion (anaphylactic)	
05	allergy to gelatin (anaphylactic)	extreme caution for MMR & varicella
06	allergy to neomycin (anaphylactic)	contraindicates IPV, MMR & varicella
07	allergy to streptomycin (anaphylactic)	contraindicates IPV
08	allergy to thimerosal (anaphylactic)	
09	allergy to previous dose of this vaccine or to any of its unlisted vaccine components (anaphylactic)	contraindicates that vaccine
10	anaphylactic (life-threatening) reaction to previous dose of this vaccine or any of its components	contraindicates that vaccine
11	collapse or shock like state within 48 hours of previous dose of DTP/DTaP	precaution for DTP/DTaP
12	convulsions (fits, seizures) within 72 hours of previous dose of DTP/DTaP	precaution for DTP/DTaP
13	persistent, inconsolable crying lasting ≥3 hours within 48 hours of previous dose of DTP/DTaP	precaution for DTP/DTaP
14	current diarrhea, moderate to severe	contraindicates vaccination temporarily (until illness resolves)
15	encephalopathy within 7 days of previous dose of DTP or DTaP	contraindicates DTP/DTaP permanently
16	current fever with moderate-to-severe illness	contraindicates vaccination temporarily (until illness resolves)
17	fever of ≥40.5°C (105°F) within 48 hours of previous dose of DTP/DTaP	precaution for DTP/DTaP
18	Guillain-Barré syndrome (GBS) within 6 weeks of previous dose of DTP/DTaP	precaution for DTP/DTaP
~~19~~ [inactive-use 36]	~~HIV infection (in household contact)~~	contraindicates OPV
~~20~~ [inactive- -use 36]	~~HIV infection (in recipient)~~	contraindicates OPV & VZV
21	current acute illness, moderate to severe (with or without fever) (e.g., diarrhea, otitis media, vomiting)	contraindicates vaccination temporarily (until illness resolves)
22	chronic illness (e.g., chronic gastrointestinal disease)	decide to vaccinate on an individual basis
23	recent or simultaneous administration of an antibody-containing blood product (immune globulin)	precaution for MMR & varicella
24	immunity: diphtheria	
25	immunity: Haemophilus influenzae type B (Hib)	

Value	Description	Explanation
26	immunity: hepatitis B	
27	immunity: measles	
28	immunity: mumps	
29	immunity: pertussis	
30	immunity: poliovirus	
31	immunity: rubella	
32	immunity: tetanus	
33	immunity: varicella (chicken pox)	
34 [inactive-use 36	immunodeficiency (family history)	contraindicates OPV & VZV unless immune status of recipient and other children in the family is documented
35 [inactive-use 36	immunodeficiency (household contact)	contraindicates OPV
36	immunodeficiency due to any cause, including HIV (hematologic and solid tumors, congenital immunodeficiency, long-term immunosuppressive therapy, including steroids)	contraindicates OPV, MMR & varicella
37	underlying unstable, evolving neurologic disorders, (including seizure disorders, cerebral palsy, and developmental delay)	precaution for DTP/DTaP
38	otitis media (ear infection) moderate to severe (with or without fever)	contraindicates vaccination temporarily (until illness resolves)
39	pregnancy (in recipient)	contraindicates MMR & varicella
40	thrombocytopenia	precaution for MMR
41	thrombocytopenic purpura (history)	precaution for MMR
42	other contraindication/precaution/immunity not listed (must add text component of the CE field with description)	
43	unknown (valid only for historical immunizations)	

NIP-defined NIP005 – Event consequence [adapted from HL7-defined Table 0240] (use in OBX-5 when OBX-3 is valued as 30949-2 – Vaccination adverse event outcome)

Value	Description
D	*Patient died*
L	*Life threatening illness*
E	*Required emergency room/doctor visit*
H	*Required hospitalization (indicate # of days in another OBX segment)*
P	*Resulted in prolongation of hospitalization*
J	*Resulted in permanent disability*
O	*None of the above*

NIP-defined NIP006 – Patient registry status

This table is now inactive. Use User-defined Table 0441 – Immunization registry status.

NIP-defined NIP007 – Vaccinated at location. (Use in OBX-5 when OBX-3 is valued as 30962-5 – Vaccinated at) (VAERS item #15)

Value	Description
PVT	***Private doctor's office/hospital***
PUB	*Public Health Clinic/Hospital*
MIL	*Military clinic/Hospital*
WRK	*Workplace*
OTH	*Other*
UNK	*Unknown*

NIP-defined NIP008 - Vaccine purchased with (use in OBX-5 when OBX-3 is valued as 30963-3- Vaccine purchased with) (VAERS item #16)

Value	Description
PVF	*Private funds*
PBF	*Public funds*
MLF	*Military funds*
OTH	*Other*

NIP-defined NIP009 – Reported adverse event previously (use in OBX-5 when OBX-3 is valued as 30967-4 - Reported adverse event previously) (VAERS item #20)

Value	Description
N	*No*
D	*To doctor*
H	*To health department*
M	*To manufacturer*

NIP-defined NIP00 – Report type recommended values. (Use in OBX-5 when OBX-3 is valued as 30978-1 – Report type) (VAERS Item #27)

Value	Description
I	*Initial*
F	*Follow-up*

ShowMeVax Table 01 - Reaction Codes

Code	Description
PERTCONT	Pertussis allergic reaction
TETCONT	Tetanus allergic reaction
HYPOTON	Hypotonic-hyporesponsive collapse within 48 hours of immunization
SEIZURE	Seizure occurring within 3 days of immunization
CRYING	Persistent crying lasting >= 3 hours within 48 hours of immunization
FEVER105	Temperature >= 105 (40.5 C) within 48 hours of immunization

HL7 Ref#	Data Type	Description	Notes
2.8.3	CE -coded element with formatted values	This data type transmits codes and the text associated with the code. To allow all six components of a CE data type to be valued, the suggested length of a field of this data type is at least 60. Components: <identifier (ST)>^<text (ST)>^<name of coding system (ST)>^ <alternate identifier (ST)>^<alternate text (ST)> ^<name of alternate coding system (ST)> Components are defined as follows: (1) Identifier (ST). The code that uniquely identifies the item being referenced by the <text>. Different coding schemes will have different elements here. (2) Text (ST). Name or description of the item in question. (3) Name of coding system (ST). Identifies the coding system used. The combination of the identifier and the name of the coding system components will be a unique code for a data item. (4-6) Three components analogous to 1-3 for the alternate or local coding system.	For HL7-defined tables, the third component, name of coding system, is constructed by appending the table number to the string "HL7." For example, the HL7 table number 0163 would be designated in the "name of coding system" component as "HL70163." The second set of codes must carry the same meaning as the first set. For example, for immunization data, a first set using CVX codes followed by a second set using CPT codes may be used to record the administration of a single vaccine. The presence of two sets of equivalent codes in this data type is semantically different from a repetition of a CE-type field. With repetition, several distinct codes (with distinct meanings) may be transmitted.
2.8.5	CK - composite ID with check digit	Components: <ID number (NM)>^<check digit (NM)>^<code identifying the check digit scheme employed (ID)>^<assigning authority (HD)> Components are defined as follows: (1) ID number (NM). (2) Check digit (NM). This is the check digit that is part of the identifying number used in the sending application. If the sending application does not include a self-generated check digit in the identifying number, this component should be valued null. (3) Code identifying the check digit scheme employed (ID). Check digit scheme codes are defined in HL7 Table 0061 - Check digit scheme. Note: Mod 10 and Mod 11 check digit algorithms are defined in the HL7 Standard Section 2.8.5.3.	This data type is used for certain fields that commonly contain check digits, e.g., PID-3-Patient identifier list. If a user is not using check digits for a CK field, the second and third components are not valued.
2.8.6	CM - composite	A field that is a combination of other meaningful data fields. Each portion is called a component. The specific components of CM fields are defined within the field descriptions.	The CM data type is maintained strictly for backward compatibility and may not be used for the definition of new fields.
2.8.10	CQ - composite quantity with units	Components: <quantity (NM)>^<units (CE)>	Future use of this data type will be avoided because the same information can be sent as a CE data type.

HL7 Ref#	Data Type	Description	Notes
2.8.12	CX - extended composite ID with check digit	Components: <ID (ST)>^<check digit (ST)>^<code identifying the check digit scheme employed (ID)>^<assigning authority (HD)>^<identifier type code (IS)>^<assigning facility (HD)> Components are defined as follows: (1) ID (ST). (2) Check digit (ST). Defined as in the CK data type except as a ST. The check digit used in this data type is not an add-on produced by the message processor. It is the check digit that is part of the identifying number used in the sending application. If the sending application does not include a self-generated check digit in the identifying number, this component should be valued null. (3) Code identifying the check digit scheme employed (ID). (4) Assigning authority (HD). Subcomponents of (4): <application identifier 1 (ID)> & <application identifier 2 (ID)> & <application identifier 3 (ID)> & <application identifier 4 (ID)> & <application identifier 5 (ID)> & <application identifier 6 (ID)> (5) Identifier type code (IS). A code corresponding to the type of identifier. This code may be used as a qualifier to the "Assigning authority" component. Refer to User-defined Table 0203 - Identifier type for suggested values. (6) Assigning facility (HD). The place or location identifier where the identifier was first assigned to the patient-part of the history of the identifier. Subcomponents of (6): <namespace ID (IS)>&<universal ID (ST)>&<universal ID type (ID)>	Refer to User-defined Table 0203 - Identifier type for suggested values for component 5.
2.8.15	DT - date	Format: YYYY[MM[DD]]	The precision of a date may be expressed by limiting the number of digits used with the format specification YYYY[MM[DD]].
2.8.18	FC - financial class	Components: <financial class (IS)>^<effective date (TS)> Components are defined as follows: (1) Financial class (IS). The financial class assigned to a person. Refer to User-defined Table 0064 - Financial class for suggested values. (2) Effective date (TS). The effective date/time of the person's assignment to the financial class specified in the first component.	Used in immunization registries to classify VFC eligibility.
2.8.19	FT - formatted text data	This data type is derived from the string data type by allowing the addition of embedded formatting instructions. These instructions are limited to those that are intrinsic and independent of the circumstances under which the field is being used. The FT field is of arbitrary length (up to 64K) and may contain formatting commands enclosed in escape characters.	

HL7 Ref#	Data Type	Description	Notes
2.8.20	HD - hierarchic designator	A unique name that identifies the system which was the source of the data. The HD is designed to be used either as a local version of a site-defined application identifier or a publicly-assigned UID. Syntactically, the HD is a group of two application identifiers: one defined by the first component, and one defined by the second and third components. Components: <namespace ID (IS)>^ <universal ID (ST)>^<universal ID type (ID)> Components are defined as follows: (1) Namespace ID (IS). Refer to User-defined Table 0300 -Namespace ID for suggested values. (2) Universal ID (ST). The UID is a string formatted according to the scheme defined by the third component, UID type. The UID is intended to be unique over time within the UID type. It is rigorously defined by the scheme constructing it. The UID must follow the syntactic rules of the particular scheme defined in the third component. (3) Universal ID type (ID). Governs the interpretation of the second component of the HD. If it is a known UID, refer to HL7 Table 0301 Universal ID type for valid values.	Used in fields that formerly used the IS data type. When only the first HD component is valued, it looks like a simple IS data type. Designed to be an application identifier, either as a local version of a site-defined application identifier or a publicly-assigned universal ID (UID). The HD is a group of two application identifiers: one defined by the first component, and one defined by the second and third components. If the first component is present, the second and third components are optional. The second and third components must either both be valued (both non-null), or both be not valued (both null).
2.8.21	ID - coded value for HL7defined tables	The value of such a field follows the formatting rules for an ST field except that it is drawn from a table of legal values. Examples of ID fields include MSH-12-Version ID and PD1-12-Protection indicator.	This data type should be used only for HL7 tables. The reverse is not true, since in some circumstances, it is more appropriate to use the CE data type for HL7 tables.
2.8.22	IS - coded value for user-defined tables	The value of such a field follows the formatting rules for an ST field except that it is drawn from a site-defined (or user-defined) table of legal values. An example of an IS field is PID-8-Sex.	This data type should be used only for user-defined tables. The reverse is not true, since in some circumstances, it is more appropriate to use the CE data type for user-defined tables.
2.8.26	NM - numeric	A number represented as a series of ASCII numeric characters consisting of an optional leading sign (+ or -), the digits and an optional decimal point. In the absence of a sign, the number is assumed to be positive. If there is no decimal point, the number is assumed to be an integer. Leading zeros, or trailing zeros after a decimal point, are not significant.	

HL7 Ref#	Data Type	Description	Notes
2.8.30	PN - person name	Components: <family name (ST)>&<last name prefix (ST)>^<given name (ST)>^<middle initial or name (ST)>^<suffix (e.g., Jr. or III) (ST)>^<prefix (e.g., Dr.) (ST)>^<degree (e.g., MD) (IS)> Components are defined as follows: (1) Family name (ST) & Last name prefix (ST). Surname/last name. Last name prefix is for use with Germanic languages (e.g., van in Ludwig van Beethoven). (2) Given name (ST). (3) Middle initial or name (ST). (4) Suffix (ST). Used to specify a name suffix (e.g., Jr. or III). (5) Prefix (ST). Used to specify a name prefix (e.g., Dr.). (6) Degree (IS). Used to specify an educational degree (e.g., MD). See User-defined Table 0360 - Degree for values.	Note: To "translate" the last name prefix and the family name, pretend the last name prefix to the family name component. If the last name prefix is not null, the last name prefix should not also be present as part of the family name component.
2.8.31	PT - processing type	Components: <processing ID (ID)>^<processing mode (ID)> Components are defined as follows: Processing ID (ID). A value that defines whether the message is part of a production, training, or debugging system. Refer to HL7 Table 0103 Processing ID for valid values. Processing mode (ID). A value that defines whether the message is part of an archival process or an initial load. Refer to HL7 Table 0207 Processing mode for valid values. The default (blank) means current processing.	
2.8.38	SI - sequence ID	A non-negative integer in the form of an NM field.	The uses of this data type are defined in the chapters defining the segments and messages in which it is used.
2.8.40	ST - string data	Any printable ASCII characters, except the defined delimiter characters. To include any HL7 delimiter character (except the segment terminator) within a string data field, use the appropriate HL7 escape sequence. String data is left justified with trailing blanks optional.	The ST data type is intended for short strings (less than 200 characters). For longer strings, the TX or FT data types should be used.
2.8.44	TS - time stamp	Contains the exact time of an event, including the date and time. Format: YYYY[MM[DD[HHMM[SS[.S[S[S[S]]]]]]]][+/-ZZZZ]^<degree of precision> **Missouri only requires to the tenth of a second precision** The date portion of a time stamp follows the rules of a date field (DT) and the time portion follows the rules of a time field (TM). HL7 recommends, but does not require, that all systems routinely send the time zone offset.	The optional degree of precision component is retained only for backwards compatibility. Immunization registries will not value this component. Instead, the precision of the data may be indicated by limiting the number of digits valued.

HL7 Ref#	Data Type	Description	Notes
2.8.45	TX - text data	String data meant for user display (on a terminal or printer). Not necessarily left justified. Leading spaces may contribute to clarity of the presentation to the user.	
2.8.47	VID - version identifier	Components: <version ID (ID)>^<internationalization code (CE)>^<international version ID (CE)> Components are defined as follows: (1) Version ID (ID). Used to identify the HL7 version. Refer to HL7 Table 0104 - Version ID for valid values. (2) Internationalization code (CE). Used to identify the international affiliate country code. ISO 3166 provides a list of country codes that may be used (see User-defined Table 0212 - Nationality). (3) International version ID (CE). Used when the international affiliate has more than a single local version associated with a single U.S. version.	
2.8.48	XAD - extended address	Components: <street address (ST)>^ <other designation (ST)>^<city (ST)>^<state or province (ST)>^<zip or postal code (ST)>^<country (ID)>^<address type (ID)>^<other geographic designation (ST)>^<county/parish code (IS)>^<census tract (IS)>^<address representation code (ID)> Components are defined as follows: (1) Street address (ST). The street or mailing address of a person or institution. (2) Other designation (ST). Second line of address (e.g., Suite 555, or Fourth Floor). (3) City (ST). (4) State or province (ST). State or province should be represented by the official postal service codes for that country. (5) Zip or postal code (ST). Zip or postal codes should be represented by the official codes for that country. In the U.S., the zip code takes the form 99999[-9999], while the Canadian postal codes take the form A9A-9A9. (6) Country (ID). Defines the country of the address. ISO 3166 provides a list of country codes that may be used (see User-defined Table 0212 - Nationality). (7) Address type (ID). Type is optional and defined by HL7 Table 0190 - Address type. (8) Other geographic designation (ST). Other geographic designation includes county, bioregion, SMSA, etc. (9) County/Parish Code (IS). This component should not duplicate component 8. Refer to User-defined Table 0289 - County/Parish for values. (10) Census Tract (IS). Refer to User-defined Table 0288 - Census tract for values. (11) Address representation code (ID). See HL7 Table 4000 Name/address representation.	HL7 Table 0190 - Address type allows user to designate the type of address (e.g., mailing, residence at birth, birth delivery location). When this field is allowed to repeat, several addresses can be recorded in the field, with each type noted.

HL7 Ref#	Data Type	Description	Notes
2.8.49	XCN - extended number and name for persons	Components: <ID number (ST)>^<family name (ST)>&<last name prefix (ST)>^<given name (ST)>^<middle initial or name (ST)>^<suffix (e.g., Jr. or III) (ST)>^<prefix (e.g., Dr.) (ST)>^<degree (e.g., MD) (IS)>^<source table (IS)>^<assigning authority (HD)>^<name type code(ID)>^<identifier check digit (ST)>^<code identifying the check digit scheme employed (ID)>^<identifier type code (IS)>^<assigning facility ID (HD)>^<name representation code (ID)> Components are defined as follows: (1) ID number. This string refers to the coded ID according to a user-defined table. If the first component is present, either the source table or the assigning authority must be valued. (2-7) These components are defined as in the PN data type (1-6). (8) Source table (IS). Refer to user-defined table 0297 - CN ID source for suggested values. Used to delineate the first component. (9) Assigning authority (HD). Subcomponents of (9): <namespace ID (IS)>&<universal ID (ST)> & <universal ID type (ID)> (10) Name type code (ID). Refer to User-defined Table 0200 - Name type for valid values. (11) Identifier check digit (ST). (12) Code identifying the check digit scheme employed (ID). (13) Identifier type code (IS). Refer to user-defined table 0203 Identifier type for valid values. (14) Assigning facility (HD). Subcomponents of (14): <namespace ID (IS)>&<universal ID (ST)> & <universal ID type (ID)> (15) Name representation code (ID). See HL7 Table 4000 Name/address representation for valid values.	See PN (1-6) for component definitions (2-7).

HL7 Ref#	Data Type	Description	Notes
2.8.50	XON - extended composite name and identification number for organizations	Components: <organization name (ST)>^<organization name type code (IS)>^<ID number (NM)>^<check digit (NM)>^<code identifying the check digit scheme employed (ID)>^<assigning authority (HD)>^<identifier type code (IS)>^<assigning facility ID (HD)>^<name representation code (ID)> Components are defined as follows: (1) Organization name (ST). The name of the specified organization. (2) Organization name type code (IS). Refer to User-defined Table 0204 - Organizational name type. (3-5) Defined as in CK (1-3). (6) Assigning authority (HD). Subcomponents of (9): <namespace ID (IS)>&<universal ID (ST)> & <universal ID type (ID)> (7) Identifier type code (IS). Refer to user-defined table 0203 - Identifier type for valid values. (8) Assigning facility (HD). Subcomponents of (8): <namespace ID (IS)>&<universal ID (ST)> & <universal ID type (ID)> (9) Name representation code (ID). See HL7 Table 4000 - Name/address representation for valid values.	See CK (1-3) for XON components (3-5).
2.8.51	XPN - extended person name	Components: <family name (ST)>&<last name prefix (ST)>^<given name (ST)>^<middle initial or name (ST)>^<suffix (e.g., Jr. or III) (ST)>^<prefix (e.g., Dr.) (ST)>^<degree (e.g., MD) (IS)>^<name type code (ID)>^<name representation code (ID)> Components are defined as follows: (1-6) These components are defined as in the PN data type. (7) Name type code (ID). Refer to HL7-defined Table 0200 - Name type for valid values. (8) Name representation code (ID). Refer to HL7-defined Table 4000 Name/address representation for valid values.	
2.8.52	XTN extended telecommunication number	Format and Components: [NNN] [(999)]999-9999[X99999][B99999][C any text]^<telecommunication use code (ID)>^<telecommunication equipment type (ID)>^<email address (ST)>^<country code (NM)>^<area/city code (NM)>^<phone number (NM)>^<extension (NM)>^<any text (ST)> For codes, refer to HL7-defined Table 0201 - Telecommunication use code and HL7-defined Table 0202 - Telecommunication equipment type.	Internet address, the first component will be null; the second component will have the code NET, and the type of Internet address is specified with Internet or X.400 in the third component. When used for an Internet address, the first component of the XTN data type will be null. If the @-sign is being used as a subcomponent delimiter, the HL7 subcomponent escape sequence may be used (See Section 2.9 of the HL7 Standard).

Appendix E - Memorandum of Agreement

The MOA with ShowMeVax Provider document is available under separate cover.

Appendix F - Sample VXU Segment Definitions

Each message is defined in special notation that lists the segment 3-letter identifiers in the order they will appear in the message. The following conventions apply to the text within this section:

- Braces, {}, indicate that one or more of the enclosed group of segments may repeat.
- Brackets, [ ], indicate that the enclosed group of segments is optional.

Abstract Message Format for VXU - Unsolicited Vaccination Update

In the case of an unsolicited update to a record, a VXU (event V04) message should be sent.

MSH	Message Header	required	does not repeat
PID	Patient Identification	required	does not repeat
[PD1]	Patient Additional Demographic	optional	does not repeat
[{NK1}]	Next of Kin / Associated Parties	optional	may repeat
[PV1}	Patient Visit	optional	does not repeat
{			
RXA	Pharmacy / Treatment Administration	required	may repeat
[RXR]	Pharmacy / Treatment Route	optional	one per RXA
[{OBX}]	Observation/Result	optional	may repeat per RXA
}			

Sample VXU message:

```
MSH|^~\&||MY
CLINIC^1324576890^NPI|SHOWMEVAX|MDHSS|20090205032342||VXU^V04|35429
1|P|2.3.1
PID|1||54321^^^^MR~12345678^^^^MA||DOE^JOHN^Q|SMITH|20030512|M||W
PD1||||||||||05^REMINDER ONLY – NO CALLS^HL70215|N||||A|20090205
PV1||R|||||||||||||||V03^VFC ELIGIBLE – UNINSURED
NK1|1|DOE^MARY|MTH^MOTHER^HL70063
RXA|0|999|20090205|20090205|50^DTAP-HIB^CVX^90721^DTAP-HIB^C4|.5
RXR|IM^INTRAMUSCULAR^HL70162|LA^LEFT ARM^HL70163
```

Batch Files of HL7 Messages
ShowMeVax supports both online and batch transmissions of immunization data. Although each HL7 message can logically stand on its own, HL7 provides additional file header and trailer segments which we have defined below.

ShowMeVax assumes a file contains only one batch of messages and therefore does not use the BHS and BTS batch header and trailer segments. If the BHS and BTS segments are used, they will be ignored. Within a file, messages may be for immunizations given at different facilities by different providers on different dates. If the messages are from different providers or facilities, these shall be identified by their values on the MSH and RXA segments.

Abstract File Format:

[FHS]	File Header segment
{[MSH …	Zero or more HL7 messages
. . .	
. . .	
]}	
[FTS]	File Trailer segment

FHS: File Header Segment Definition
The FHS segment is used to head a file of HL7 messages. Although ShowMeVax prefers to receive the FHS segment, it is optional.

Sequence	FHS Element Name	Data Type	Required	Repeat	Length	HL7 Table #
1	FHS-1: Field Separator	ST	YES		1	
2	FHS-2: Encoding Characters	ST	YES		4	
3	FHS-3: Sending Application	ST			15	
4	FHS-4: Sending Facility	ST	YES		20	
5	FHS-5: Receiving Application	ST	YES		15	
6	FHS-6: Receiving Facility	ST	YES		20	
7	FHS-7: File Creation Date/Time	TS	YES		26	
9	FHS-9: File Name	ST	YES		20	
11	FHS-11: File Control ID	ST			20	
12	FHS-12: Reference File Control ID	ST			20	

FHS Example:

FHS|^~\&|IMM-APP|YOUR CLINIC INC^0987654321^NPI|SHOWMEVAX|MO0000 |20090127093425|YCI-MO20090126||IMMYCI20090127-003.HL7

Field Notes

FHS-1 through 3 and FHS-5 through 8 have the same definitions as the corresponding elements in the MSH segment and are not repeated here.

FHS-4 Sending Facility (required by ShowMeVax)

This field identifies the sending facility by means of a name, identifier, and identifier type. The preferred identifier is a client ID issued by the Missouri Department of Health and Senior Services using "MOCLIENTID" as the identifier type. The National Provider ID is an alternate identifier and is sent using "NPI" as the identifier type.

Note that FHS-4 Sending Facility and MSH-4 Sending Facility will quite often be identical. For example, if "Hometown Clinic" administers an immunization (MSH-4) and does their own reporting (FHS-4), the same information will be used in both FHS-4 and MSH-4.

However, sometimes one organization functions as a broker or clearinghouse for multiple facilities. In this case, FHS-4 should contain the identifying information for the site that is compiling the messages and doing the actual physical data transfer (i.e., the broker / administering provider), while the MSH-4 should contain the information for the facility where the immunization was performed (i.e., the clinic / service provider).

FHS-4 example:

|LARGE COUNTY HEALTH DEPT^3780999^MOCLIENTID|
|YOUR CLEARINGHOUSE INC^2224477888^NPI|
|HOMETOWN CLINIC^3330999^MOCLIENTID|

FHS-9 File Name (required by ShowMeVax)

This field can be used by the application processing the file. It can have extra components if needed. ShowMeVax requires all file names to begin with "IMM" and prefers for file names to include something that indicates where the file came from (e.g., abbreviation or ID of sending facility) and a date. The date might represent the date(s) of the data, date prepared, or date sent. Note that if the date is the date sent and if multiple files are sent on the same day, something additional must be included to ensure uniqueness.

FHS-9 examples:

|IMM-COLECO200801-200806.HL7|
|IMMOZFAM-200904161033.hl7|
|IMM260999-MAR09.HL7

FHS-11 File Control ID

This field is used to uniquely identify a particular file. It can be echoed back in FHS-12 Reference File Control ID.

FHS-12 Reference File Control ID

This field contains the value of FHS-11-file control ID when this file was originally transmitted. This field is not valued if this file is being sent for the first time.

FTS: File Trailer Segment Definition
The FTS segment is used to define the end of a file. The FTS segment is optional.

Sequence	FTS Element Name	Data Type	Required	Repeat	Length	HL7 Table #
1	FTS-1: File Message Count	NM			10	
2	FTS-2: File Trailer Comment	ST			80	

FTS Example:

|FTS|134

FTS-1 File Message Count

This field contains the number of messages contained in the file.

FTS-2 File Trailer Comment

This field is a free text field which may be included for convenience, but is not further defined in the HL7 protocol.

MSH: Message Header Segment Definition

The MSH segment defines the intent, source, destination, and some specifics of the syntax of a message.

Sequence	MSH Element Name	Data Type	Required	Repeat	Length	HL7 Table #
1	MSH-1: Field Separator	ST	YES		1	
2	MSH-2: Encoding Characters	ST	YES		180	
3	MSH-3: Sending Application	HD			180	
4	MSH-4: Sending Facility	HD	YES		180	
5	MSH-5: Receiving Application	HD	YES		180	
6	MSH-6: Receiving Facility	HD	YES		180	
7	MSH-7: Date/Time of Message	TS	YES		26	
9	MSH-9: Message Type	CM	YES		7	0076, 0003
10	MSH-10: Message Control ID	ST	YES		20	
11	MSH-11: Processing ID	PT	YES		3	0103
12	MSH-12: Version ID	VID	YES		60	0104

MSH Example:

MSH|^~\&|IMM-APP|YOUR CLINIC^0987654321^NPI|SHOWMEVAX|MO0000|20090127093425||VXU^V04|IM-549308|P|2.3.1

Field Notes:

MSH-1: Field Separator (required by HL7)

This is the character to be used as the field separator for the rest of the message. ShowMeVax requires the HL7 recommended field separator of "|".

MSH-2: Encoding Characters (required by HL7)

Four characters in the following order: the component separator, repetition separator, escape character, and subcomponent separator. ShowMeVax requires the HL7 recommended values of ^~\&.

MSH-3 Sending Application Name

This field identifies the sending application among all other applications within the sender's network enterprise. The network enterprise consists of all the applications that participate in the exchange of HL7 messages within the enterprise. Immunization providers may use this field to identify their software name and version.

MSH-4 Sending Facility (required by ShowMeVax)

This field uses a name, identifier, and identifier type to identify the facility where the data contained in this individual message originated (i.e., the "owner" of the message information). This is usually a healthcare provider like a clinic, a doctor's office, or a county health department. The required identifier is a provider ID issued by the Missouri Department of Health and Senior Services using "MOCLIENTID" as the identifier type.

MSH-4 example:

|LARGE COUNTY HEALTH DEPT^3780999^MOCLIENTID|
|HOMETOWN CLINIC^3330999^MOCLIENTID|

MSH-5 Receiving Application (required by ShowMeVax)

Uniquely identifies the receiving application among all other applications within the receiver's network enterprise. "SHOWMEVAX" should be used for immunizations updates being sent to the State of Missouri immunization registry.

MSH-6 Receiving Facility (required by ShowMeVax)

This field identifies the receiving facility. "**MODHSS**" should be used for immunization updates being sent to the State of Missouri immunization registry.

MSH-7 Date/Time of Message (required by ShowMeVax)

Date/time the sending system created the message. The typical HL7 Time stamp (TS) data type is defined to be in the format:

YYYY[MM[DD[HHMM[SS[.S[S[S[S]]]]]]]][+/-ZZZZ]^<degree of precision>

Missouri only requires to the tenth of a second precision

However, for ShowMeVax purposes if no time zone is sent, the time zone will be assumed to be that of the sender.

MSH-7 example:

|20081209143807|

MSH-9 Message Type (required by HL7)

The receiving system uses this field to know the data segments to recognize and, possibly, the application to which to route this message. Within HL7, the triggering event is considered to be the real-world circumstance causing the message to be sent. The second component is not required on acknowledgment messages. The third component is not required for immunization registries, since in the VXQ, VXR, VXX, and VXU messages, the message structure is the same designation as the trigger event type shown in component two.

The specific components of fields using the CM data type are defined within the field descriptions:

The components for this field are: <message type (ID)>^<trigger event (ID)>^<message structure (ID)> Refer to HL7 Table 0076 - Message type, HL7 Table 0003 - Event type, and HL7 Table 0354 - Message structure for values.

The unsolicited transmission of a vaccination record update message would appear as: |VXU^V04|.

The unsolicited transmission of an observation message, such as a VAERS report, would appear as: |ORU^R01|.

In acknowledgement messages, the value "ACK" is sufficient and the second component may be omitted. |ACK|

MSH-10 Message Control ID (required by HL7)

Number or other identifier that uniquely identifies the message. The receiving system echoes this ID back to the sending system in the message acknowledgment segment (MSA). Many facilities simply use a Date/Time stamp plus a sequentially assigned number.

MSH-11 Processing ID (required by HL7)

Used to indicate how to process the message as defined in HL7 processing rules. When left null, ShowMeVax will assume P for Production is intended.

MSH-12 Version ID (required by HL7)

Matched by the receiving system to its own HL7 version to be sure the message will be interpreted correctly. Use a value of "2.3.1" to indicate HL7 Version 2.3.1.

PID: Patient identification Segment Definition

The PID segment is used by all applications as the primary means of communicating patient identification information. This segment contains permanent patient identifying and demographic information that, for the most part, is not likely to change frequently.

Sequence	PID Element Name	Data Type	Required	Repeat	Length	HL7 Table #
3	PID-3: Patient Identifier List	CX	YES	YES	20	0203
5	PID-5: Patient Name	XPN	YES		48	0200
6	PID-6: Mother's Maiden Name	XPN			48	0200
7	PID-7: Date of Birth	TS	YES		26	
8	PID-8: Sex	IS	YES		1	0001
10	PID-10: Race	CE			80	0005
11	PID-11: Patient Address	XAD		YES	106	0190, 0212, 0289
13	PID-13: Phone Number	XTN		YES	40	0201
19	PID-19: SSN	ST			16	
22	PID-22: Ethnic Group	CE			80	0189
23	PID-23: Birth Place	ST			60	
24	PID-24: Multiple Birth Indicator	ID			1	0136
25	PID-25: Birth Order	NM			2	
29	PID-29: Patient Death Date	TS			26	
30	PID-30: Patient Death Indicator	ID			1	0136

PID Example:

PID|||444^^^^PI~988776655^^^^MA~111225555^^^^SS||
Leighton^Frederick^Q|Redfield|20040908|M||2106-3^White^HL70005|
123 Party Cove St.^Apt. 223^Osage Beach ^MO^78888-2345^US^P^^029
~^^^MO^^US^BDL||
^PRN^^^^512^7542270^^|||||111225555|||H^Hispanic or Latino^HL70189||Y|1|

Field Notes:

PID-3: Patient Identifier List (required by HL7)

Contains one or more identifiers used to uniquely identify the patient (e.g. medical record number, patient identifier, Medicaid number(Same as Missouri's DCN**)** , SSN, etc.). Sub-components 1 (ID) and 5 (identifier type code) are required in the PID-3 field. An identifier type code of "PI" should be used when specifying the unique identifier assigned to the patient by the submitting entity (*see Table 0203***). Note:** For patient matching, ShowMeVax requests that the submitter

include the Medicaid number (Same as Missouri's DCN), and SSN (without hyphens) whenever possible. For messages sent from ShowMeVax, MOHSAIC party ID will be sent along with the Medicaid number. ShowMeVax does not display the SSN and uses the SSN as a method of search and de-duplication if needed.

PID-3 example:

|444^^^^PI~988776655^^^^MA~111225555^^^^SS|

Where: Submitter's patient identifier = 444
Medicaid number = 988776655
SSN = 111225555

PID-5: Patient Name (required by HL7)

This field contains the legal name of the patient. See the XPN data type. The patient's last and first names are required in the first two components, respectively. If the name type code component is included, it should be valued "L" for Legal (*see Table 0200*). **Note: ShowMeVax cannot match patients with placeholder first names such as *Infant, Baby, Girl, Boy*, etc., and does not support repetition of this field.**

PID-6: Mother's Maiden Name

Contains the family name under which the mother was born (i.e., before marriage). See the XPN data type. If the name type code component is included, it should be valued "M" for Maiden Name (*see Table 0200*). ShowMeVax will only use the family name component from this field, extracting the mother's first name from the NK1 segment. ShowMeVax does not support repetition of this field.

Note: ShowMeVax encourages the inclusion of this field to help distinguish between patients with the same names and dates of birth.

PID-7: Date of Birth (required by ShowMeVax)

This field contains the patient's year, month and day of birth in the format YYYYMMDD. ShowMeVax ignores any time component.

PID-8: Sex (required by ShowMeVax)

Use 'F', 'M', or 'U' (*see Table 0001).*

PID-10: Race

Contains a code indicating the patient's race (*see Table 0005*). If it is necessary to further define the patient's ancestry as Hispanic, use field PID-22-Ethnicity Group. ShowMeVax does not support repetition of this field.

PID-11: Patient Address

ShowMeVax will only retain an address type of "H" (Home), "P" (Permanent), "M" (Mailing), or "BR" (Birth Residence) (see *Table 0190*) and recommends use of the USPS format for recording street address, other designation (e.g. "Apt 312"), city, state and zip. See *Table 0212* for the three-character country code, if not "US". The county code component must specify the FIPS County code (see *Table 0289*). Note that since county code is a specific component of this data type, it should be reported in this field and not in PID-12. Also, a post office box should never be included in the "other designation" component of a street address. The second repetition of this field should be used to report the patient's birth state and country, specifying an address type of "BDL" (see *Table 0190*). ShowMeVax will retain only the birth state and country from this repetition. If the ISO 3166 Country Code is not known, simply send the name of the country as free text.

PID-11 examples:

|123 Party Cove St^Apt 223^Osage Beach ^MO^65065-2345^US^P^^029|

Where: Street address = 123 Party Cove St
Other designator = Apt 223
City = Osage Beach
State = MO
Zip code = 65065-2345
Country code = US
Address type code = P (permanent)
County code = 029

|^^^TX^^US^BR|

|^^^^^CAN^BR|

PID-13: Phone Number

This field contains the patient's phone numbers. ShowMeVax recognizes telecommunication use codes in component 2 (s*ee Table 0201*) and telecommunication equipment type codes in component 3 (see *Table 0202*). If "PRN" is specified, ShowMeVax will use the 6th and 7th components for the area code and phone number respectively. This is the preferred specification (*see PID-13 example 1 below*). If component 2 is missing, ShowMeVax will assume the phone number is formatted as follows in component 1 (*see PID-13 example 2 below*): [NNN][(999)]999-9999[X99999][B99999][C any text]. ShowMeVax supports repetition of this field.

PID-13 Example 1 (preferred):

|^PRN^PH^^^512^5551234^^|

Where: Telecommunication use code = PRN
Telecommunication equipment type code=PH

Area code = 512
Phone number = 5551234

PID-13 example 2:

|(512)555-1234|

Where: Area code = (512)
Phone number = 555-1234

PID-19: Social Security Number – patient

Although ShowMeVax prefers to receive the patient's Social Security Number in PID-3, it will also be accepted in PID-19.

PID-22: Ethnic Group

This field can be used to further define the patient's ancestry as Hispanic (*see Table 0189*). ShowMeVax does not support repetition of this field.

PID-23: Birth Place

If a sending facility is not able to produce repetitions of PID-11, but wishes to send the State and/or Country in which the patient was born, ShowMeVax also supports receiving this information in PID-23. If the ISO 3166 Country Code is not known, simply send the name of the country as free text.

PID-23 examples:

|MO^US|
|^MEX|
|^NIGERIA|

PID-24: Multiple Birth Indicator

This field indicates whether the patient was part of a multiple birth (*see Table 0136*). Use "Y" to indicate that the patient was part of a multiple birth; otherwise this field can be omitted.

PID-25: Birth Order

This filed is relevant when client was born in a multiple birth. Use 1 for the first born, 2 for the second, etc. This field is useful in matching client data to existing records.

PID-29: Date of Death

The date of death if patient is deceased. Give the year, month, and day (YYYYMMDD). ShowMeVax ignores any time component. If a death date is sent, the Patient Registry Status in PD1-16 should indicate a value of "P" for permanently inactive/deceased.

PID-30: Patient Death Indicator

This field indicates whether or not the patient is deceased. Refer to *Table 0136* for valid values.

PD1: Patient Additional Demographic Segment

The PD1 carries patient additional demographic information that is likely to change.

Sequence	PD1 Element Name	Data Type	Required	Repeat	Length	Table #
11	PD1-11: Publicity Codes	CE			80	0215
12	PD1-12: Protection Indicator	ID			1	0136
16	PD1-16: Registry Status	IS			1	0441
17	PD1-17: Immunization Registry Status Effective Date	DT			8	

PD1 Example:

PD1||||||||||03^REMINDER/RECALL-NO CALLS^HL70215|||||A|19900607||

Where: Publicity Code= 03
Registry Status = A
Immunization registry status effective date= 19900607

In this PD1 example, the patient may be sent both reminder and recall notices by mail, but no calls are acceptable. This patient is active in the registry as of June 7, 1990.

PD1-11: Publicity Codes.

This field contains a user-defined code indicating what level of publicity is allowed (e.g., no publicity, family only) for the patient. This field will be used by immunization registries to indicate whether reminder/recall notices may be sent to a patient.

PD1-12: Protection Indicator.

This field identifies whether access to information about this person should be kept from users who do not have adequate authority for the patient.

PD1-16: Registry Status.

This field identifies the registry status of the patient. Examples include active, inactive, lost to follow-up, moved or gone elsewhere (MOGE).

PD1-17: Immunization Registry Status Effective Date.

Effective date for registry status reported in PD1-16. A deceased patient should be recorded in PID-30, with date and time of death recorded in PID-29.

PV1: Patient Visit Segment Definition

The PV1 segment is used to send visit-specific information about the patient.

Sequence	PV1 Element Name	Data Type	Required	Repeat #	Length	Table #
2	PV1-2: Patient Class	IS	YES		1	0004
20	PV1-20: Financial Class	FC		YES	50	0064

PV1 Example:

PV1||R||||||||||||||||V02^19900607~H02^19900607|

This PV1 segment shows that the patient is a recurring patient who is VFC eligible and is a Medicaid patient. The effective date of the VFC and Medicaid status is June 7, 1990. Since a single VFC effective date is being submitted, this status should only be applied to the immunizations given on June 7, 1990. The eligibility status for the other immunization dates is unknown.

Field Notes:

PV1-2: Patient Class (required by HL7)

This field contains a code indicating a patient's class or category. It is required by HL7, although it does not have a consistent industry-wide definition. This component should be coded with an "R".

PV1-20: Financial Class

This field contains the financial class assigned to the patient and the associated effective date, and is used to identify sources of reimbursement. ShowMeVax supports the repetition of this field for each immunization being sent with corresponding dates (see field RXA-3).

NK1: Next of Kin Segment Definition

The NK1 segment contains information about the patient's next of kin and other associated parties. This segment is optional and allowed to repeat, providing information about multiple associated parties.

Sequence	NK1 Element Name	Data Type	Required	Repeat #	Length	Table #
1	NK1-1: Set ID	SI	YES		4	
2	NK1-2: Name	XPN	YES	YES	48	
3	NK1-3: Relationship	CE	YES		60	0063
4	NK1-4: Address	XAD			106	
5	NK1-5: Phone number	XTN		Maximum of two phone numbers	40	0201, 0202
16	NK1-16: Date of Birth	TS			26	
33	NK1-33: Next of kin/associated party's identifiers	CX		YES	32	0203

NK1 Examples:

NK1|1|Green^Helen^Denise|MTH^Mother^HL70063|||||||||||||||||||||||
RR^Reminder/recall Contact for Immunization Registry^HL70222||||898666725^^^^SS|

NK1|2|Green^Mark^Alan|FTH^Father^HL70063|||||||||||||||||||||||||||822546618^^^^SS|

Field Notes

NK1-1: Set ID – NK1 (required by HL7)

This field contains a number that identifies the occurrence of this NK1 segment within its association with the PID segment. Using the NK1-1 Set ID, multiple NK1 segments can be associated with one PID segment. Use "1" as the Set ID for the first occurrence of the NK1 segment within the message, "2" for the second, and so forth.

NK1-2: Name (required by ShowMeVax)

This field contains the name of the next of kin or associated party. ShowMeVax does not support repetition of this field.
Note: The *mother's maiden name* should be reported in PID-6, *never* in NK1-2.

NK1-3: Relationship (required by ShowMeVax)

This field defines the relationship between the patient and the name of the next of kin or associated party (*see Table 0063*). Use only the first three components of the CE data type, for example:
|
MTH^Mother^HL70063|. ShowMeVax does not support repetition of this field.

NK1-4: Responsible Person's Mailing Address.

See the XAD data type. ShowMeVax does not support repetition of this field.

NK1-5: Responsible Person's Telephone Number.

This field contains the responsible person's phone numbers. ShowMeVax recognizes telecommunication use codes in component 2 (s*ee Table 0201*) and telecommunication equipment type codes in component 3 (see *Table 0202*). If "PRN" is specified, ShowMeVax will use the 6th and 7th components for the area code and phone number respectively. This is the preferred specification (*see PID-13 example 1 below*). If component 2 is missing, ShowMeVax will assume the phone number is formatted as follows in component 1 (*see PID-13 example 2 below*): [NNN][(999)]999-9999[X99999][B99999][C any text]. ShowMeVax supports only one repetition of this field; i.e., a maximum of two phone numbers will be accepted.

NK1-5 example 1 (preferred format and showing one repetition):

|^PRN^PH^^^512^5551234^^~^WPN^PH^^^512^5541122^^|

Where: Telecommunication use code = PRN

Telecommunication equipment type code=PH

Area code = 512

Phone number = 5551234

NK1-5 example 2:

|(512)555-1234|

Where: Area code = (512)

Phone number = 555-1234

NK1-29: Contact Reason.

This field identifies the role the next of kin/associated party plays with respect to the patient. Immunization registries may use this field to indicate the next of kin/associated party who is designated to receive reminder/recall notices, if applicable.

NK1-33: Next Of Kin/Associated Party's Identifiers.

This field contains identifiers for the next of kin/associated party. ShowMeVax supports SSN and Medicaid number (Same as Missouri's DCN**)**. This field, not NK1-37 - Contact Person SSN, should be used to record all identifiers, including

SSN. The SSN is not displayed in ShowMeVax and is only used for patient security (see PD1-12).

RXA: Pharmacy/Treatment Administration Segment Definition

The RXA carries pharmacy administration data. It is a repeating segment and can record unlimited numbers of vaccinations. ShowMeVax requires at least one RXA segment be included.

Sequence	RXA Element Name	Data Type	Required	Repeat #	Length	Table #
1	RXA-1: Give Sub-ID Counter (HL7 REQUIRED)	NM	YES		4	
2	RXA-2: Administration sub-ID counter (HL7 REQUIRED)	NM	YES		4	
3	RXA-3: Date/time start of administration (HL7 REQUIRED)	TS	YES		26	
4	RXA-4: Date/time end of administration (if applies)	TS	YES		26	
5	RXA-5: Administered code (HL7 REQUIRED)	CE	YES		100	0292
6	RXA-6: Administered amount. (HL7 REQUIRED)	NM	YES		20	
9	RXA-9: Administration notes	CE	YES		200	NIP001
10	RXA-10: Administering provider	XCN			200	
11	RXA-11: Administered at location	CM			200	
15	RXA-15: Substance lot number	ST			20	
17	RXA-17: Substance manufacturer	CE			60	0227
18	RXA-18: Substance refusal reason	CE			200	NIP002
21	RXA-21: Action Code-RXA	ID			2	0323

RXA Examples:

RXA|0|999|20060817091022|20060817091022|20^DTaP^CVX^90700^DTaP^C4|999|||
00^NEW IMMUNIZATION RECORD^NIP001|
SMI001^SMITH^JOHN^G^JR^DR^MD^^^^^^VEI|
^^^ABC CLINIC^^^^^321 MEDICAL DR^SUITE 325^OSAGE BEACH^MO^65065^US||||
X-1234||MSD^MERCK^MVX||||A|

RXA|0|999|20040908|20040908|08^HepB^CVX^90744^HepB^C4|999|||
01^Historical information^NIP001|

Field Notes:

RXA-1: Give Sub-ID Counter (required by HL7)

The NIP's guidelines recommend that this field's value should always be zero. Not used by ShowMeVax.

RXA-2: Administration Sub-ID Counter (required by HL7)

The NIP's guidelines recommend that this field's value should be "999" for registries that do not record dose number.

RXA-3: Date/Time Start of Administration (required by HL7)

Contains the date the vaccine was administered. ShowMeVax ignores any time component.

RXA-4: Date/Time End of Administration (required by HL7)

Contains the date the vaccine was administered. ShowMeVax ignores any time component.

RXA-5: Administered Code (required by HL7)

This field identifies the vaccine administered. ShowMeVax accepts the CVX code, CPT code, or Vaccine Trade Name for the vaccine administered. If using the CVX code, give the CVX code in the first component and "CVX" in the third component. If using the CPT code or vaccine trade name, use components four through six. For example, give the CPT code in the fourth component and "C4" in the sixth component, |^^^90700^DtaP^C4|. If using vaccine trade name, use "MOTN" as the name of the coding system. When sending/receiving trade names to/from ShowMeVax, the CVX component of this field should be included with the CVX code repeated in the 4th component.

RXA-5 examples:

Submitting only the CVX code: |20^DTaP^CVX|

Submitting only the CPT code: |^^^90700^DTaP^C4|

Submitting CVX and CPT codes: |20^DTaP^CVX^90700^DTaP^C4|

Submitting CVX and Trade Name:
|20^DTaP^CVX^20^Infanrix^MOTN|

RXA-6: Administered Amount (required by HL7)

The NIP's guidelines recommend that this field's value should be "999" for registries that do not collect the administered amount.

RXA-9: Administration Notes (required by ShowMeVax)

ShowMeVax is following the NIP's guidelines by using this field to indicate whether the immunization being reported was administered (new) or came from other records (historical). The submitter should assign the value "00" to the identifier component of this field to indicate that the immunization is new (*see Table NIP001*).

RXA-9 examples:

New immunization: |00^New Immunization Record^NIP001|

Historical immunization: |01^Historical Information^NIP001|(source unspecified)
|07^Historical Information^NIP001|(from school record)

If an immunization is reported as "new", ShowMeVax will store the provider and facility information from RXA-10 and RXA-11 with the immunization.

RXA-10: Administering Provider

The HL7 standard states that this field can be used to identify the provider who ordered the immunization (the "order-er"), the person physically administering the vaccine (the "vaccinator"), and/or the person who recorded the immunization (the "recorder"). However, ShowMeVax is only interested in identifying and storing the "vaccinator", and only when the immunization is specified as "new" in RXA-9. For each "new" immunization, submitters should include their unique identifier for the "vaccinator" in component 1 of this field (the ID number) and the vaccinator's name in components 2 through 7 (the person name). In addition, the submitter should specify VEI - for vaccinator employee number; as the identifier type code in component 13 to indicate the person being described is the "vaccinator" (*see Table 0203*). ShowMeVax will store the "vaccinator" information with the immunization.

RXA-10 example:

Dr. Jones has his own practice, and is the only doctor. He ordered and administered the immunization being reported for our patient. The RXA-10 field could look like this:

|72980987^Jones^Robert^^^^MD^^^^^^VEI|

Where: Dr. Jones' ID = 72980987

Dr. Jones' full name = Robert Jones, MD

RXA-11: Administered-at Location

Contains the name and address of the facility where the immunization was administered. Submitters should specify the facility name in component 4 of this field, and the address in components 9 through 14. ShowMeVax recommends use of the USPS format for recording street address, other designation (e.g. "Suite 325"), city, state and zip. See *Table 0212* for the two-character country code, if not "US".

RXA-11 example:

|^^^Metro Clinic^^^^^321 Medical Dr.^Suite 325^Osage Beach^MO^65065^US|

Component 4:	Facility name	= Metro Clinic
Component 9:	Street address	= 321 Medical Dr.
Component 10:	Other designator	= Suite 325
Component 11:	City	= Osage Beach
Component 12:	State	= MO
Component 13:	Zip code	= 65065
Component 14:	Country code	= US

The components for this field are:

<point of care (IS)>^<room (IS)>^<bed (IS)>^<facility (HD)>^<location status (IS)>^<patient location type (IS)>^<building (IS)>^<floor (IS)>^<street address (ST)>^<other designation (ST)>^<city (ST)>^<state or province (ST)>^<zip or postal code (ST)>^<country (ID)>^<address type (ID)>^<other geographic designation (ST)>

Subcomponents of facility (HD):

<namespace ID (IS)>&<universal ID (ST)>&<universal ID type (ID)>

RXA-15: Substance Lot Number

This field contains the manufacturer's lot number for the vaccine administered. ShowMeVax does not support repetition of this field.

RXA-17: Substance Manufacturer Name

Contains the manufacturer of the vaccine administered (*see Table 0227*). HL7 specification recommends use of the external code set MVX, and ShowMeVax requests that the coding system component of the CE field be valued as "MVX" (see *Table 0396*). ShowMeVax does not support repetition of this field.

RXA-17 example:

|AB^Abbott Laboratories^MVX|

RXA-18: Substance Refusal Reason

When applicable, this field records the reason the patient refused the vaccine. See *Table NIP002*. Any entry in this field indicates that the patient did not take the substance. The vaccine that was offered should be recorded in RXA-5, with the number 0 recorded for the dose number in RXA-2. Do not record contraindications, immunities or reactions in this field. They should be recorded in OBX segments. ShowMeVax does not support repetition of this field.

RXA-21: Action Code

This field tells the status of the record. This field provides a method of correcting vaccination information previously transmitted with incorrect patient identifying information. See *Table 0323*. When empty, A for Add is assumed.

RXA-21 examples:

Record should be Added: |A|
Record should be Updated: |U|

RXR: Pharmacy/Treatment Route Segment

The Pharmacy/Treatment Route Segment contains the alternative combination of route and site.

Sequence	RXR Element Name	Data Type	Required	Repeat #	Length	Table #
1	RXR-1: Route (HL7 REQUIRED)	CE	YES		60	0162
2	RXR-2: Site	CE			60	0163

RXR Example:

RXR|IM^INTRAMUSCULAR^HL70162|LA^LEFT ARM^HL70163|

Field Notes:

RXR-1: Route of Administration

This field is the route of administration from *Table 0162*.

RXR-2: Site of the Route of Administration

This field is the site of the route of administration from *Table 0163*.

OBX: Observation/Result Segment Definition

The Observation/Result Segment is used to transmit an observation. ShowMeVax uses this segment to send and/or receive information on patient contraindications, precautions, and immunities. Thus, ShowMeVax only recognizes LOINC® Codes 30945-0 (Vaccination contraindication and/or precaution) and 31044-1 (Reaction – Locally defined (see ShowMeVax Table 01)).

Sequence	OBX Element Name	Data Type	Required	Repeat #	Length	Table #
1	OBX-1: Sequence Numbers	SI			4	
2	OBX-2: Value type	ID			3	
3	OBX-3: Observation identifier	CE			590	
5	OBX-5: Observation value				65536	Nip004
11	OBX-11: Observation result status (HL7 REQUIRED)	ID	YES		1	0085
14	OBX-14: Date-time of the observation	TS			26	

OBX examples:

OBX|1|NM|30936-9^DTAP/DTP DOSE COUNT IN COMBINATION VACCINE^LN||4|||||F|

OBX|2|NM|30938-5^HAEMOPHILUS INFLUENZAE TYPE B (HIB) DOSE COUNT IN COMBINATION VACCINE^LN||4|||||F|

Field Notes:

OBX-1: Sequential Numbers.

Use "1" for the first OBX within the message, "2" for the second, and so forth.

OBX-2: Value Type.

Use CE for ShowMeVax.

OBX-3: Observation Identifier.

When indicating a **Vaccination Contraindication/Precaution**, use 30945-0 in this field and enter a Contraindication, Precaution, or Immunity code (NIP004) in OBX-5.

Example: OBX|1|CE|30945-0^Contraindication^LN||21^acute illness^NIP004^^^^|||||F||||20051231|

When indicating a **Reaction to Immunization**, use 31044-1 in this field and enter a Reaction code (ShowMeVax Table 01) in OBX-5.

Example: OBX|1|CE|31044-1^Reaction^LN||^HYPOTON^hypotonic^ ShowMeVax01^^^||||||F|

When indicating a **Vaccine Immunity**, use 30945-0 in this field and enter an Event Consequence code (NIP004) in OBX-5.

Example: OBX|1|CE| 30945-0^ Vaccination contraindication/precaution ^LN||33^Immunity:Varicella (chicken pox)^NIP004^^^||||||F|

OBX-5: Text reporting Contraindication, Precaution, or Immunity (NIP004) and Reaction (see ShowMeVax Table 01).

ShowMeVax has imposed a CE data type upon this field. The first component of which is required.

(e.g., |PERTCONT^Pertussis contra^ShowMeVax01^^^|)

OBX-11: Observation Result Status.

The field is required for HL7. Use "F" for ShowMeVax.

OBX-14: Date-Time.

This field records the date of the observation (YYYYMMDD).

Appendix G - Duplicate Shot Processing